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ANNUAL MEDICAL REPORT

FOR THE

YEAR ENDING 31st DECEMBER 1924,

INCLUDING

THE ANNUAL REPORT

OF THE

MEDICAL RESEARCH LABORATORY

FOR THE YEAR 1924.

Swift Press Ltd., Nairobi.

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MEDICAL DEPARTMENT,
HEAD OFFICES,
NAIROBI, 29th August, 1925.

The Honourable,
The Acting Colonial Secretary,
NAIROBI.

Sir,

I have the honour to forward herewith for the information of His Excellency the Acting Governor and for transmission to the Right Honourable the Secretary of State, the Annual Report of the Medical Department for the year 1924.

I have the honour to be,
Sir,
Your obedient servant,
JOHN L. GILKS,
Principal Medical Officer,
Colony & Protectorate of Kenya.

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I.-ADMINISTRATION.

SECTION I.—DEPARTMENTAL.

1924

1.—ESTABLISHMENT.

The sanctioned Estimates for the year 1924, allowed for the following increases of Establishment.

Administration Division.

Chief Sanitary Inspector 1. European Clerk. 1.

Medical Division.

Medical Officers 2. Ward Master 1.
Male Nursing Orderly 1.

Sanitation Division.

Sanitary Inspectors, 2nd grade, 2.

Laboratory Division.

Chemical Officers 2. Entomologist 1.
European Laboratory Assistant, Learner Grade, 1.

The new appointments of Chemical Officers do not represent an increase in the Colony's budget, but have come about as the result of abolition of the former Chemical Research Department and the apportioning of officers formerly engaged therein to Departments chiefly concerned with chemical activities.

Unfortunately owing partly to the fact that sanction for several of the above mentioned appointments was not given till well on in the year, partly to delay in the arrival of officers and partly to the occurrence of vacancies owing to the transfer or promotion of officers to other territories or Colonies the staff available for carrying on the work of the Department was no greater than in the previous year. As a consequence no new stations could be opened during the year and it was only with difficulty that existing stations were maintained.

Partly as a result of lack of staff and partly because of the unequal incidence of leave it has been necessary to detain officers after the ordinary period of service has been completed; such a course can only be a temporary expedient and if persisted in leads to increased difficulties in the future and to a feeling of dissatisfaction and disappointment on the part of those affected.

The training of Africans as dispensers and laboratory assistants has been continued and though the disappointments are many distinct progress has been made. It is not an easy matter to find candidates for training who are possessed of the necessary preliminary education and when found they too often evidence a lack of discipline and a tendency to regard the minor matters of routine such as the cleansing of apparatus as menial tasks and beneath their dignity.

The lack of properly trained dressers is increasingly felt throughout the Country. Owners of estates and employers of labour generally are realizing the advantages of providing simple medical assistance on the spot to their employees. It is also evident that a more highly trained type of dresser is required to take charge of the subdispensaries scattered throughout the Reserves in connection with the various Native Hospitals. A scheme for training and a syllabus has been drawn up which it is proposed shall be adopted throughout the Country both at Government and mission hospitals, but before effect can be given to the proposals increased staff will be necessary. The existing staff cannot undertake the extra duties involved in giving systematic teaching and in the holding of the examinations which will be an integral part of the scheme. It is proposed that the training and examination of dressers shall be entirely under the auspices of Government and that after passing the final examination, whether education has been received at a Government institution or not successful candidates shall receive a Government certificate.

A further pressing reform which must accompany any scheme of training Africans is a total reorganisation of the conditions of service of dressers and other junior members of the Department. At the present time the pay is usually less than that offered to an ordinary house boy and there are no definite prospects to induce a superior type of candidate to join and to adopt a medical career. The matter is one which is receiving earnest consideration by the Medical Department, but it must be recognised that improvement will necessitate further provision in the estimates.

The progress of the Colony during the year under review has been very rapid. Good crops have been reaped and high prices have been obtained. The general prosperity is reflected in the satisfactory condition of the finances generally and it is confidently hoped that it will be possible to find money in the near future for the necessary increase in medical and sanitation work generally. The increase in trade has rendered more urgent the inception of measures of sanitation throughout the Country generally and more especially in the grain growing centres where the threat of plague and its accompanying possibilities are every day becoming of greater importance.

Railway development has been pushed on: the responsibilities of the Medical Department in connection with construction are a considerable source of anxiety. It has to be remembered that an increase in transport facilities though necessary for the increased prosperity of the Country is at the same time fraught with possibilities for the spread of disease.

ESTABLISHMENT.

The establishment of the Medical Department as sanctioned for the year 1924, was as follows:—

Administrative Division.

Principal Medical Officer	1	Clerks	3
Deputy Principal Medical Officer	1	Stenographer	1
Chief Sanitation Officer	1	1st Grade Clerk	1
Chief Sanitary Inspector	1	2nd Grade Clerks	2
Medical Storekeeper	1	3rd Grade Clerks	11
Office Superintendent	1	4th Grade Clerks	6
Accountant	1	Messengers and Packers	18

Medical Division.

Resident Surgical Officer	1	Superintendent, Mental Hospital.	1
Senior Medical Officers	4	Matron, ,, ,,	1
Medical Officers	17	Assistant Matron, ,, ,,	1
District Surgeons	3	Warders ,, ,,	2
European Dispensers	2	Assistant Surgeons	5
Matron	1	Sub-Assistant Surgeons	22
Nursing Sisters	19	Compounders	8
Male Nursing Orderly	1	Native Hospital Attendants	(as necessary)
Wardmaster	1	Mental Hospital Attendants	,,

Sanitation Division.

Medical Officers of Health	4	Nurses.	2
Senior Sanitary Inspectors	2	Mechanics and Greasers	3
Sanitary Inspectors, 1st Grade	6	Native Attendants for Infectious Diseases Hospitals, Leper Lazarettos and Quarantine Stations.	(as necessary).
Sanitary Inspectors, 2nd Grade	5		
Sanitary Overseer	1		
Superintendent, Infectious Diseases Hospital.	1		

Laboratory Division.

Bacteriologist	1	Laboratory Assistant (European)	1
1st Assistant Bacteriologist	1	Laboratory Assistant (European Learner Grade)	1
2nd Assistant Bacteriologist	1	Laboratory Assistants (Asiatic)	2
Government Analyst	1	3rd Grade Clerk	1
Chemical Officer	1	Native Laboratory Attendants.	(as necessary).
Entomologist	1		

2.—LIBRARIES.

The medical library has been added to by the purchase of books and periodicals. A catalogue has been compiled and circulated and medical men throughout the Country have availed themselves of the facilities offered.

The demand for "The Journal of the Kenya Medical Service" increased so much that its continuance as a typewritten circular was no longer possible and an arrangement for printing had to be come to. At the same time the title was changed to that of the "Kenya Medical Journal". The circulation is by no means confined to members of the medical profession and the publication is proving an effective means of drawing the attention of the Country generally to the problems of health and sanitation. Support is being received from neighbouring Countries.

SECTION II.—EXTRA DEPARTMENTAL.

3.—REGISTRATION OF MEDICAL PRACTITIONERS AND DENTISTS.

The Ordinance governing registration came into force on the 24th September, 1910.

Since that date and up to the end of the year the following have been placed on the Register:—

Registered Medical Practitioners	135
Licensed Medical Practitioners	6
Dentists	12

Eighty medical practitioners were registered for Government service, and sixty-six as private practitioners.

The Board nominated for the purposes of the Ordinance, consisted of:—
Principal Medical Officer (Chairman).
Dr. A. R. Paterson,
Dr. C. J. Wilson, M.C.,
Dr. W. H. Kauntze, M.B.E.,
Dr. A. J. Jex-Blake,
Dr. R. W. Burkitt,
with the Principal Medical Officer as Chairman and Registrar.

One meeting was held during the year.

4.—THE DRUGS AND POISONS ORDINANCE, 1909.

This Ordinance controls the licensing of chemists and druggists as well as the sale of poisons throughout the country.

Thirty-one names have been placed on the Registrar since the introduction of the Ordinance to the end of 1924.

The Board appointed under the Ordinance consisted of the following:—
Principal Medical Officer, (Chairman),
Dr. A. R. Paterson,
Dr. C. J. Wilson, M.C.,
Dr. W. H. Kauntze, M.B.E.,
A. A. White Esq., M.P.S.
L. A. Howse, Esq., M.P.S.
with the Principal Medical Officer as Chairman and Registrar.

No meeting was held during this year.

5.—THE PUBLIC HEALTH ORDINANCE, 1913.

The Board established under this Ordinance deals with proposals for the subdivision into building sites of land in the neighbourhood of townships. Two meetings were held during the year.

The Annual Report of the proceedings of the Board will be found in Appendix "A".

6.—THE PUBLIC HEALTH ORDINANCE, 1921.

Under this Ordinance there is established a Board—the Central Board of Health—with the Principal Medical Officer as Chairman. The function of the Board is to advise the Governor on any matter affecting the public health.

Five meetings were held during the year.

The Annual Report of the proceedings of the Board will be found in Appendix "B".

SECTION III.—FINANCIAL.

The sanctioned estimates for 1924, were not different from the draft estimates as passed by Legislative Council on which comment was made in the 1923 Report.

The total amount sanctioned, £126,593, was larger by £350 than the estimates of the previous year.

Certain increases in staff were granted on the details of which comment has already been made. The total for personal emoluments was £8,295 in excess of the previous year; this was largely counterbalanced by economies which it had been found possible to effect in the working of the Department.

The comparative table of the sanctioned estimates and expenditure for the past three years is as follows:—

	Sanctioned Estimates.	Extraordinary Estimates.	Total Sanctioned.	Actual Expenditure.	Extraordinary Expenditure.
1922.	£177,436.	£3,834.	£181,270.	£137,881.10.67.	£9,455.7.61.
1923.	£126,243.	£3,934.	£130,177.	£115,557.13.92.	£6,224.6.56.
1924.	£126,593.	£350.	£126,943.	£118,688.	£188.

Of the sum total provided a matter of £1,920 represents expenditure on account of the activities of the section of the former Chemical Research Department, which, under the new arrangement, was incorporated at the beginning of the year in the Medical Department.

The actual expenditure in 1924 was £8,255 less than the amount sanctioned. The saving resulted from the fact that the staff was considerably under strength during the whole of the year.

The revenue collected amounted to £12,256, as against £11,908, in 1923.

Out of a total estimated expenditure in 1924 of £1,910,262, for the Colony and Protectorate £126,593 represented expenditure on public health or medical relief, a ratio of 1 to 15.08 or 6.6 per cent.

Detailed returns of revenue and expenditure are given in Table II at the end of the report.

II.-PUBLIC HEALTH.

POPULATION.

The figures for the population of the Colony as determined by the census taken in 1921, and as estimated in 1924 are given below.

	1921. Census.	1924. Estimated.	Increase.	Decrease.
Europeans. ..	9,651	11,002	14%	—
Asiatics, (Excluding Arabs).	25,880	24,771	—	4½%
Arabs. ..	10,102	9,753	—	3½%
Africans. ..	2,483,500	2,560,983	3%	—

Of the above figures those for the European population are approximately correct. Largely the increase in the European population is due to immigration, but it may be noted that in part it is due to an excess of births over deaths. The number of European births and deaths and marriages recorded for 1923 and 1924, were as follows:—

	1923.	1924.
Births	194	209
Deaths	64	81
Marriages	117	123

The European birth rate for 1924 was therefore approximately 19 per 1,000 and the death rate approximately 7 per 1,000.

It is earnestly to be hoped that measures for the registration of births, deaths and marriages among all sections of the population in, at any rate, the larger townships of Mombasa, Nairobi and Kisumu will be instituted before long by Government.

Such vital statistics as are available with regard to the three larger townships Mombasa, Nairobi and Kisumu are given below.

(a) MOMBASA.

Population.—The population of the Township was obtained by Census in 1921. This, together with the estimated population for 1924, as supplied by the Resident Commissioner, is given below:—

Race.	1921.				1924.			
	Male.	Female.	Children.	Total.	Male.	Female.	Children.	Total.
Europeans.	383	175	95	653	507	160	154	821
Arabs.	2152	1610	1938	5700	2550	1100	1600	5250
Indians.	2896	1506	2900	7302	3951	2625	2736	9312
Goans.	489	83	124	696	500	80	75	655
Natives.	7438	6826	3719	17983	10840	7920	6936	25696
Other Races.	—	—	—	—	120	61	53	234
Total.	13358	10200	8776	32234	18468	11946	11554	41968

Although the accuracy of the above figures is open to grave doubt and it is quite possible that the population of the Township is considerably more than is shown in the above tables, the figures are of use as giving some indication of the rapid growth of the population in the period of three years.

It is seen that the estimated increase in the total population in 3 years is 9,734; the 1924 estimate shows 30% increase on the population of 1921.

Births.—The following births were registered during the year:—

	Males.	Females.	Total.
Europeans.	6	10	16
Asiatics.	22	6	28
Africans.	—	—	—
Other Races.	2	3	5
	30	19	49

Total number of births registered during 1923 was 34, of which 15 were of Europeans and 19 of non-Europeans.

Compulsory Registration of Births is still applicable to Europeans only.

Marriages.—12 European marriages were registered in Mombasa during 1924.

Deaths.—The number of deaths reported as having occurred in the Township during the year is 563, of which 375 were males and 188 females.

The number of deaths from all causes reported during each of the previous 11 years were:—

1913	1.053
1914	645
1915	614
1916	633
1917	676
1918	977
1919	723
1920	1.284
1921	692
1922	680
1923	678

It will be noted that fewer deaths were reported in 1924 than in any of the preceding 11 years. This might be accounted for by reason of the town remaining free from epidemics of serious diseases.

As the only hospital of any size on the Coast is situated in Mombasa, it is possible that quite a few of the deaths occurring in Mombasa are in people who have come into the town for treatment. Conversely, however, it is quite possible that numbers of Africans developing any serious illness in Mombasa return to their Reserves and die there.

Until the notification and registration of deaths is made universal, and records sent in are more complete, no recorded death rate can be struck.

The crude death rate is a figure of very little value, but is the only rate that can be estimated to-day.

The crude death rate is further of every debatable value, as it is estimated on a total population figure of doubtful accuracy.

Taking the total population to be 41,960 the crude death rate for 1924 is 13.40 per thousand, living as compared with 16.6 in 1923, and 16.7 in 1922.

Pneumonia was responsible for 80 deaths or 14.2% of the total deaths. Broncho-pneumonia and other diseases of the respiratory system for a further 58 deaths making a total, due to respiratory disease, of 138 or 24.3% of all deaths compared to 132 deaths or 19.5% in 1923.

Tuberculosis chiefly owing to the pulmonary form of the disease was responsible for 75 deaths or 13.3% compared to 85 deaths or 12.5% in 1923.

Malaria is shown as responsible for 74 deaths or 13.2% compared to 74 or 9.2% in 1923.

The notifiable diseases other than tuberculosis were responsible for only 12 deaths, 4 of which were due to enteric fever. In 1923, these diseases caused 27 deaths.

As in 1923, the three main causes of mortality in this Township are:—

1. Pneumonia and allied diseases.
2. Pulmonary Tuberculosis.
3. Malaria.

Pneumonia and allied diseases:—Whether the larger number of deaths shown under this head were due to primary pneumonia or whether due to pneumonia secondary to some other disease cannot be shown.

This disease and tuberculosis are often associated with over-crowding and bad ventilation, conditions under which a large proportion of the population in Mombasa lives. Their control would appear to be dependent on improved housing conditions, primarily dependent in Mombasa on a scheme of demolition of the hopelessly over-crowded slum area.

Pulmonary Tuberculosis must to-day be considered as the chief cause of the waste of adult life in Mombasa—all, but one of the 75 deaths due to this disease occurred in adults.

Malaria:—While it is possible that quite a few other pyrexial conditions are included amongst the deaths attributed to this disease, it is equally possible that the primary cause of death in many of the pneumonias, broncho-pneumonias, etc., was malaria.

Malaria with tuberculosis are preventable diseases, and their persistence in the township as causes for so much wastage of life is a matter for grave consideration.

Infantile Mortality.—Again this year no data are available on which an infantile mortality rate can be calculated.

Of the total number of deaths reported from the Township 109 or 19.4% were of infants under 1 year of age compared with 103 or 15.2% in 1923.

The causes of deaths given are:—

Premature birth and inanition.	30
Pneumonia, Broncho-pneumonia and Bronchitis	41
Diarrhoea and Enteritis	11
Convulsions	7
Malaria	12
Influenza	1
Rickets	1
Atelectasis	2
Syphilis	1
Hemiplegia	1
Hydrocephalus	2
TOTAL. ..	109

Bronchitis, Broncho-Pneumonia and Pneumonia it will be noted were responsible for 37.6% of the total deaths in infants.

It is also interesting to note that Malaria is shewn as claiming 11% of the total deaths.

AGE DISTRIBUTION OF INFANT MORTALITY.

Under 4 weeks.	4 weeks to 3 months.	Total under 3 months.	3 — 6 months.	6 months and over.	Total under 1 year.
46	8	54	25	30	109

More than two-thirds of infantile deaths as will be seen occur in the first six months of life. The number of deaths occurring in the period 4 weeks to 3 months is remarkably low.

Infantile deaths reported by race.

Europeans	Nil.
Indians	67
Arabs	25
Africans	17

It is satisfactory to note that although 16 European births were notified during the year no deaths under one year occurred.

The figures of the infantile deaths amongst other races are remarkable and would appear to indicate one or all of the following:—

(1) That the birth rate amongst Arabs and Africans in Mombasa is very low compared with Indians.

The estimated female populations show adult females as follows:—

Indians	1,100.
Arabs	2,625.
Africans	7,920.

(2) That the death rate amongst Arab and African infants is much lower than amongst Indians.

(3) That Arab and African infantile deaths are not all reported.

It is possibly true that the birth rate amongst the Arab and African population is lower than amongst Indians, especially as housing conditions amongst Africans are generally unsatisfactory and privacy difficult amongst the poorer classes.

That the death rate amongst infants of these races is lower than amongst Indians is improbable.

The non-reporting of all deaths amongst infants is possible and probable.

Notifiable Infectious Diseases.

During the year the number of cases of infectious diseases notified was 126, as compared with 106 in 1923.

This year again with very few exceptions the notifications were made by medical practitioners in Government employ.

Disease.	Cases 1924.	Notified 1925.	Disease.	Cases 1924.	Notified 1923.
Tuberculosis.	86	64	Plague	1	18
Cerebro Spinal Fever	4	5	Measles	2	26
Whooping Cough	—	4	Leprosy	5	5
Enteric Fever	23	1	Malta Fever	—	1
Puerperal Fever	1	—	Smallpox	3	—
			Erysipelas	1	—

It will be noted that during the year 21 more cases of Tuberculosis were notified than 1923.

The cases of Tuberculosis reported were in races as follows:—

Europeans	3
Indians and Goans	16
Seychelles	2
Arabs	17
Africans	48

Age periods of cases of Tuberculosis notified, 49 or 57% of cases notified were in persons between the ages of 30 and 40.

24 or 29.9% in persons between the ages of 20 and 30.

12 or 13.9% in persons between the ages of 40 and 50.

The age period 10 to 20 and 50 to 60 only gave 5 cases each and one case was reported in a child under 10.

(b) NAIROBI.

Population:—The non-native population of Nairobi was obtained by Census in 1921, the African population being estimated at the same time.

1921.

Races.	Males.	Females.	Children.	Total.
Europeans. ..	1100	777	462	2339
Goans. ..	819	109	133	1061
Indians. ..	4487	1139	1997	7623
Arabs. ..	57	14	15	86
Anglo-Indians, Seychells, etc.	115	57	59	231
	6578	2096	2666	11340
Africans (Estimated population).				12088
Total Population in 1921.				23428.

The figures refer to the Municipal area only, and their accuracy is open to serious doubt. As no statistics are available with which to estimate the population of the town with even approximate accuracy at the close of 1924, no attempt has been made to do so. No evidence is forthcoming of any marked increase or decrease of the population during the past few years, but it would appear that a conservative estimate has been made of the African population.

Marriages.—48 European marriages were registered during the year as compared with 47 in 1923, 49 in 1922, 57 in 1921 and 26 in 1920.

Births.—95 European births were registered during the year as compared with 106 in 1923, 128 in 1922, 142 in 1921 and 85 in 1920. Of the total European births 46 were males and 49 females.

Deaths.—The number of deaths from all causes reported as having occurred in Nairobi was 536, as compared with 575 in 1923, 504 in 1922, 570 in 1921 and 528 in 1920. Of the total deaths 405 were males and 131 were females. European deaths numbered 43, Asiatic 144 and African 349.

Taking the population of Nairobi to be 23,428, the crude annual death rate is therefore 22.9 per thousand living. The crude European death rate is 18.4, the crude Asiatic death rate 16.0 and the crude African death rate 28.9. The corresponding death rates for 1923 were European 8.4, Asiatic 16.5 and African 33.5.

It is regretted that no recorded death rate can be calculated, as in many instances it is quite impossible to ascertain whether the person dead is a normal inhabitant of the town or not. It should also be noted that death returns are still compiled from reports issued by the Police, a system incompatible with accuracy.

Infant Mortality.—Owing to the absence of legislation requiring general registration of births it is impossible to calculate the infant mortality rate, a death rate that is generally accepted as being the most sensitive index of the health of a community. Of the total number of deaths reported, 66 or 12.3 per cent. were of infants under one year of age. The deaths were divided amongst the different races as follows:—

DEATHS OF INFANTS UNDER ONE YEAR OF AGE.

Race.	Total deaths.	Infant deaths.	Percentage.
European. ..	43	6	14.0
Asiatic. ..	144	49	34.0
African. ..	349	11	3.2
Total. ..	536	66	12.3

Pneumonia was the chief cause of death, 23 out of the 66 deaths being due to this disease. Dysentery and Diarrhoea were given as the cause of death in only 5 cases, and 11 deaths were due to Premature Births and Labour Complications.

Analysis of General Mortality.—Owing to the fact that many persons dying are not seen by a medical practitioner before death, a number of deaths are classified as being due to unspecified causes. As a result statistics relating to the causes of mortality must be accepted with some reserve. A gradual improvement in this state of affairs is taking place, during the year only 28 deaths being thus classified as compared with 40 in 1923 and 58 in 1922.

As in past years pneumonia again caused more deaths than any other single disease, being responsible for 141 or 26.1 per cent. of the total number of deaths. In 1923, deaths from pneumonia totalled 164 or 28.5 per cent. and in 1922 170 or 31.5 per cent. Although there has been a steady decline in the number of deaths attributed to this disease during the last three years, it is still responsible for an enormous wastage of life.

Deaths from plague numbered 61 or 11.4 per cent. of the total.

Tuberculosis was responsible for 21 deaths or 3.9 per cent. of the total.

Malaria was given as the cause of death in 32 cases.

Diseases of the Circulatory, Digestive and Nervous systems were responsible for 51, 18 and 27 deaths respectively.

The notifiable infectious diseases other than plague and tuberculosis accounted for 26 deaths or 4.9 per cent. of the total.

An analysis of the causes of death discloses the fact that an enormous wastage of life is taking place in Nairobi each year, the greater proportion of which should be preventable. Owing to the insanitary and overcrowded conditions under which large numbers of the inhabitants of the town are compelled to live, many valuable lives are being lost, lives which the Colony can ill afford to spare.

(c) KISUMU.

VITAL STATISTICS.

Estimated Population.

	1922.	1923.	1924.
Europeans.	144	140	141
Asiatics.	1,202	940	950
Africans.	3,943	5,000	5,050
	5,289	6,090	6,141

BIRTHS.

	1922.	1923.	1924.
Europeans.	8	2	2
Asiatics. Africans.		Unknown.	

DEATHS.

	1922.	1923.	1924.
Europeans.	2	Nil.	2
Asiatics.	20	24	29
Africans.	93	105	79
	115	129	110

Annual death rate per thousand population.

1922.	21.7
1923.	21.2
1924.	17.9

Deaths one year and under.

1922.	15
1923.	34
1924.	20

The deaths included all those from the European and Native Hospitals many of which occurred in people living normally outside the township.

GENERAL AFRICAN POPULATION.

The chief factor to which in the past consideration has been given in estimating the state of the public health of the General African Population during the particular year has been the incidence of the formidable epidemic diseases such as plague and small-pox and attempts to compare the state of the public health during one year with that which pertained during previous years have been largely confined to a comparison of the incidence of these diseases in the years under review. It must be remembered however that though diseases such as plague, small-pox and influenza may be more fatal among an unhealthy population than among a healthy one, the occurrence of the actual outbreaks is governed by many factors other than the resistance or susceptibility of the population. The fact that the incidence of plague may have been greater in one year than in another is no evidence that the physical efficiency of the general population of the area affected has been subject to any variation.

The information on which it is possible to base estimates of the public health of a population which will most readily allow of comparisons being made from year to year is the information which is obtained by the registration of births and deaths and by the taking at frequent intervals of a detailed and accurate census of the population. Unfortunately such information is not available with regard to the general native population of Kenya and in its absence it is difficult to say whether the state of the public health as far as the large native population is concerned has during 1924 been better or worse than in former years. As will be seen from the figures given at the beginning of this section it is estimated that during the past four years the native population has increased by 3 per cent. The conditions, however, under which estimates of the native population are and must for some years continue to be made, are not such as to admit of any great degree of accuracy being attained and it is impossible to state with certainty that an increase has occurred. The figures given are nevertheless of interest in that they afford no support to any suggestion that the native population as a whole is decreasing in numbers.

Even, however, if it be accepted that some increase has occurred it is of the greatest importance not to lose sight of the fact that in every tribe in Kenya an enormous wastage of human life occurs annually both among the infant and the adult sections of the community. It is further of importance to remember that owing to unhygienic surroundings and improvidence it is probable that, but a small percentage of those individuals who reach adult life are ever fully developed physically and that of the population as a whole there are few indeed who have not at one time or other suffered from some chronic infection. Malaria and infection with intestinal parasites alone are undoubtedly responsible for an immense amount of ill health and so long as the environment of the people and the general standard of living and of domestic hygiene remains such that infection with one or other or both of these diseases is the rule rather than the exception it will be unjustifiable to suggest that the public health has improved because in any year such as that under review plague has been responsible for fewer deaths than usual and small-pox a negligible quantity.

Against the probability that small-pox will in the future be controlled and that yaws may be prevented from causing the same amount of disability that it has occasioned in the past must be set the probability that tuberculosis and syphilis are increasing. Fortunately to the credit side may be set the facts that definite efforts are now being made not only to improve both the quantity and the quality of the economic products of the native reserves, but also to teach the inhabitants how to use these products so that the general standard of living may be raised.

EUROPEAN OFFICIALS.

The comparative table of statistics relating to European Officials shows a close similarity between the figures for 1923 and 1924. Deaths and invalidings for the two years were numerically the same.

The tables relating to in-patients and out-patients are as follows:—

	In-Patients.	Out-Patients.
1924.	594	354
1923.	596	275
1922.	635	567

Deaths among European Officials totalled 4 and were due to:—

Tuberculosis.	1
Blackwater.	1
Disease of the Central Nervous System	1
Injury.	1

Seven invalidings took place, the causes being:—

Disease of the eye.	1
Circulatory Disease	1
Debility	1
Neurasthenia	2
Tuberculosis	1
Sinus	1

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES AMONGST EUROPEAN OFFICIALS IN THE COLONY AND PROTECTORATE OF KENYA.

	1922.	1923.	1924.
Total number of officials resident. ..	1.337	1,190	1,280
Average number resident.	940	846	898
Total number on sick list.	635	595	594
Total number of days on sick list. ..	5,640	3,884	4,346
Average daily number on sick list ..	15.45	10.64	11.90
Percentage of sick to average number resident.	1.64	1.25	1.32
Average number of days on sick list to each patient.	8.88	6.50	7.31
Average sick time to each resident. ..	6.00	4.59	4.83
Total number invalided	16	7	7
Percentage of invaliding to total residents.	1.19	.59	.54
Total deaths.	5	4	4
Percentage of deaths to total residents. ..	.37	.34	.31
Percentage of deaths to average number resident.	.53	.47	.45
Number of cases of sickness contracted away from residence.	—	—	—

NON-EUROPEAN OFFICIALS.

Apart from a rise in the figures relating to deaths the statistics concerning Non-European Officials in 1924, approximate somewhat closely to those of 1923. There is a considerable drop in the numbers of invalidings.

Deaths were 5 in number as against 2 in the preceding year. The causes were:—

Broncho-pneumonia	2
Septicaemia	1
Blackwater	1
Enteric Fever	1

Invalidings totalled 12 as against 35 in 1923. The causes were:—

Tachycardia	1
Debility	3
Neurasthenia	3
Myopia	1
Anaemia	1
Tuberculosis	1
Myocarditis	1
Arthritis	1

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES AMONGST NON-EUROPEAN OFFICIALS IN THE COLONY AND PROTECTORATE OF KENYA.

	1922.	1923.	1924.
Total number of officials resident. ..	2,325	2,035	2,064
Average number resident.	1,879	1,645	1,653
Total number on sick list.	3,337	2,603	2.554
Total number of days on sick list. ..	18.207	13,585	14,729
Average daily number on sick list ..	49.88	37.22	40.03
Percentage of sick to average number resident.	2.65	2.25	2.44
Average number of days on sick list to each patient.	5.45	5.22	6.53
Average sick time to each resident. ..	9.68	8.24	8.91
Total number invalided .. .	42	35	12
Percentage of invaliding to total residents.	1.81	1.23	.58
Total deaths.	6	2	5
Percentage of deaths to total residents. ..	.25	.09	.24
Percentage of deaths to average number resident.	.32	.12	.30
Number of cases of sickness contracted away from residence.	—	—	—

III.-MAJOR ENDEMIC AND EPIDEMIC DISEASES.

I.—YAWS.

During the year 45,527 cases of yaws were treated in hospitals, at dispensaries or by Medical Officers on tour in their districts. The number reported as treated in 1923 was 64,344.

The decrease in the number of cases treated is in part to be attributed to the following factors:—

(a) In certain districts it has been possible to devote more attention to the differentiation of yaws from syphilis, and a considerable number of cases which, under other circumstances, would have been returned as yaws have been returned as syphilis. This is reflected in the returns for the numbers of cases of syphilis treated which show a considerable increase over the returns for 1923.

(b) In certain other districts there were numerous changes in the personnel of the medical staff during the year with consequent temporary interruption of intensive anti-yaws work.

The decrease may also be in part due to a diminution in the incidence of yaws in certain districts as a result of the work carried out in previous years. Whether this is generally the case or not cannot definitely be said, but in the opinion of a number of Medical and Administrative Officers there has been a considerable diminution of the incidence of the disease in certain areas.

The system referred to in the 1923 Report of training the dressers in charge of dispensaries in the giving of bismuth injections has been considerably extended, and the main line of attack against the incidence of the disease is now directed through these channels. Here again discrepancies in figures are likely to arise. The native, seeing the rapid results that are achieved in the healing of yaws lesions, comes to regard an injection of bismuth as a cure for all diseases and presents himself at a dispensary with a demand for that particular treatment: he is likely to be registered as a case of yaws when perhaps his real disability is something quite different. In the Fort-Hall Reserve a system has been adopted in 1924, by which patients suffering from external lesions only are registered by dressers as yaws; in this way a very much smaller total of yaws has been returned than in 1923, probably smaller than the actual number which received treatment. The figures however will have a distinct value in future years as showing the incidence of recent infections.

It is to be regretted that no accurate data have been produced giving an indication as to the success or otherwise of the yaws campaign, though at the same time there is little doubt that good results are accruing. Medical Officers have not the time to search for patients who have received treatment, and it is notoriously difficult to get the native to report after he has left hospital. A further difficulty is in the identification of such as may be induced to report; only a proportion of male adults have been registered and women and children are not registered at all. In South Kavirondo a system has been adopted by which patients seen and treated by the Medical Officer are issued with a metal numbered disc which, it is hoped, they will retain, possibly as an ornament, and produce should they require to attend at a future date. The details of the case are recorded and a means of easy identification is provided. Should the innovation prove a success, and appearances suggest that this will be the case, the system will be extended. Paper tickets have proved their usefulness up to a point, but are not sufficiently permanent.

For the same reasons as are set forth above it has not been possible to obtain information as to the effect on the Wassermann reaction of injections of bismuth in cases of yaws.

Differentiation of syphilis and yaws still presents very great difficulty in certain instances. It has been pointed out by the Medical Officer, Central Kavirondo, that in that district "syphilis affects chiefly young adults, yaws affects children and mothers."

The treatment given has been, as in 1923, to administer bismutho-tartrate of sodium and potassium intramuscularly except in a few cases where circumstances seemed to warrant the exhibition of novarsenobillon.

The total number of cases treated during the past six years are as follows :—

1919	639.
1920	657.
1921	7,401.
1922	24,233.
1923	64,344.
1924	45,527.

II.—SYPHILIS.

The total number of cases treated in 1924 shows a large increase over the number treated in 1923.

The figures are as follows :—

1924	11,492.
1923	6,532.
1922	2,896.
1921	1,914.
1920	1,614.

The increase shewn is due to the inclusion under the head "Syphilis" of 5,954 cases of disease treated in the native district of Central Kavirondo. The returns for cases of yaws and syphilis treated in this district during the past two years are as follows :—

Year.	Cases returned as Yaws.	Cases returned as Syphilis.	Unclassified	Total'
1923	2,029	1,872	1,765	5,666
1924	4,923	5,954		10,877

From the above figures it will be seen that there has been a large increase not only in the number of cases returned as syphilis, but also in the number returned as yaws. There is, however, no reason to suppose that there has been any increase in the incidence of yaws as the fact that larger numbers were treated can be accounted for by the opening of new dispensaries. Whatever may be the case with regard to yaws there is some reason for supposing that there has been an increase in the incidence of syphilis in recent years. In 1921 during an examination of 4,787 adult inhabitants of the Central Kavirondo District 55 or 1.1% were found to show evidence of syphilitic infection, in 1924 5,954 cases were treated among a population of 270,000, i.e., 1.8% of the population presented themselves for treatment. As it is by no means probable that all persons infected with syphilis presented themselves it would appear that the incidence of the disease is considerably greater than has hitherto been supposed to be the case. The problem presented by the necessity for providing an adequate course of treatment for each person suffering from syphilis in a native reserve with a population of 270,000, an incidence rate of over 1.8% and an area of 1,843 square miles is one of some difficulty and one which can only be solved by the provision of a more adequate staff than is represented by one Medical Officer.

Apart from figures, the natives themselves in Central and South Kavirondo are expressing uneasiness at the increase of syphilis: so much so that certain chiefs instituted a system of fines on unmarried people who contracted the disease. The practice led to undesirable results and had to be stopped.

The difficulties above mentioned with regard to the number of population, area, etc., are by no means the only ones which present themselves in considering a campaign against syphilis among a people such as is met with in Kavirondo. The attitude with regard to sexual matters, the superstitions connected with the disease and the general African lethargy all tend to promote a rapid spread. Educational measures towards the growth of a public conscience will require to be instituted in addition to a curative campaign.

The districts from which the majority of cases of syphilis have been returned are Mombasa, Central and South Kavirondo.

The routine treatment which has been followed has been, as in 1923, by injections of sodium potassium bismuths-tartrate with N.A.B. when such has been specially indicated. The reports which have been received as to the results of treatment by the bismuth salt vary very considerably. One Medical Officer states that he is satisfied while another expresses doubt as to whether satisfactory results are ever obtained. There is little doubt that the people themselves consider bismuth is efficaceous. In any collection of patients in Kavirondo a feature which presents itself is the number of women who demand injections of bismuth on the plea that they had been infected with syphilis which had caused a series of abortions and that their friends who had suffered in a similar fashion had been able, after injections, to produce healthy offspring. One infant was even named "Doctor" as a recognition of the benefit produced by injections on the mother.

As in the case of yaws it has not been possible to obtain definite information as to the results of treatment by bismuth salts either on the individual or on the population generally.

III.—LEPROSY.

There has again been an increase in the number of cases treated though this increase is much less than that recorded in 1923. The numbers for the last three years are as follows:—

Year.	Number of Lepers Reported.
1922	81.
1923	236.
1924	332.

There are no indications on which an estimate of the amount of leprosy in the country can be based; it would appear, however, that the incidence is not very high though cases are reported from all stations.

The accommodation provided for lepers is by no means satisfactory and it is a matter for regret that it was not possible for Government to provide funds for the establishment in 1925 of a proper leper settlement at the Coast to replace the present extremely unsatisfactory settlement at Malindi.

Routine treatment for leprosy is carried on in the infectious diseases hospitals at Mombasa and Nairobi and at several of the other medical stations. The difficulty which was emphasized in last year's report of persuading patients to remain under treatment has again been generally experienced and it is only at Mombasa, Nairobi, Kakamega and Kisii, that it has been possible to carry out anything approaching a course of treatment. The reports generally have been encouraging. At Nairobi the treatment consisted in the administration of the ethyl esters of the fatty acids of chaulmoogra oil, injections being given both intramuscularly and intravenously.

The patients have derived marked benefit from the treatment, not only have many of the signs and symptoms of the disease been arrested, but the patients themselves state that they feel much better. In three cases it has been decided to discontinue further treatment in the meantime, all active signs of the disease having disappeared, but the patients still remain under observation.

At Mombasa and Kisii moogrol has been used and at Kakamega a combination of ethyl esters and chaulmoogra oil itself.

IV.—TUBERCULOSIS.

The number of cases reported as treated at Hospitals and dispensaries for the past three years are as follows:—

Year.	Cases.	Deaths.
1922	310	70.
1923	280	68.
1924	528	72.

The disease occurs among all races and cases have been reported from almost every medical station in the Colony and Protectorate. Whether tuberculosis was in the past endemic among the native races of the Colony is unknown and whether it is yet endemic in the native reserves is still a matter of conjecture. The fact remains that the disease occurs and that in Mombasa to take only one instance 13.3% of the total deaths notified were reported to have been due to tuberculosis. It would be surprising if the increase of cases which have been reported during 1924 for the Country generally did not represent at least in part an increase in the incidence of the disease. Both in the towns, on farms and estates and in the native reserves housing conditions are too often such as to be conducive to the spread of tuberculosis. The segregation of the sick native is possible probably in only a small proportion of cases while the education of those who cannot be segregated is not practicable under present conditions. With the object of preventing the spread of tuberculosis alone if for no other reason the improvement of housing in all parts of the Colony is a matter of urgency.

Kenya has apparently gained a reputation in England as a place where tuberculosis can be recovered from and there is a steady immigration of invalids, some of them in an advanced stage of the disease. Some do well especially when their means allow of a life of ease on a farm in a healthy district, but others especially in Nairobi go down hill rapidly. The problem of the tubercular European of limited means is beginning to assume considerable proportions and the question of the provision of a sanatorium will require to be considered should the number of cases continue to increase.

V.-PLAGUE.

I.—INCIDENCE OF THE DISEASE.

NYANZA PROVINCE.

South Kavirondo District.—A number of small isolated outbreaks occurred during the year.

Central Kavirondo District.—Sporadic cases of plague occurred throughout the year, but only in May and June, when probably about 100 deaths occurred, was there any considerable incidence of the disease.

North Kavirondo District.—276 deaths of plague were reported chiefly during the latter half of the year, but the Medical Officer of the District is of opinion that the above numbers represent a considerable overstatement of fact. Whether, however, the figure given be an overstatement or not, the incidence for 1924 would appear to have been much less than the incidence in the previous year, when 411 cases were reported to have occurred.

Kisumu District.—Two cases occurred in July at Londiani, a township on the Uganda Railway about 50 miles from Kisumu.

Kisumu Township.—One case occurred in a native village on the outskirts of the township.

Summary: Nyanza Province.—The incidence of plague throughout the province would appear to have been much less than that which occurred in 1923.

UKAMBA PROVINCE

Nairobi.—23 cases occurred during the year. The cases were almost entirely confined to the first two months of the year, being a continuation of the outbreaks which started in the town in the latter half of 1923. During the rest of the year only 3 cases occurred, the last case being reported in July, and since then the town has been free from the disease.

KIKUYU PROVINCE.

Kyambu District.—Sporadic cases occurred throughout the year, but the disease did not, in any case, assume alarming proportions.

Fort-Hall District.—In contradistinction to the previous year when a very large number of cases of plague were reported only sporadic cases were reported in 1924.

NAIVASHA PROVINCE.

In each of the years 1920, 1921 and 1922 small outbreaks of plague have occured during the third quarter of the year in the neighbourhood of Nakuru. In January 1924 a small outbreak again occurred at Nakuru; this outbreak lasted into February, and 18 cases occurred. In April one case occurred at Naivasha, and from May till August several small outbreaks occurred on maize farms in the district with a total of 35 cases. After the middle of August no further cases were reported.

Though the total number of cases which occurred during these outbreaks was small, the annual appearance of the disease in this district in which many large maize farms are situated and the fact that in 1924 the infection occurred at a number of points, some of which were many miles apart, give considerable cause for anxiety, and it is of prime importance that much greater attention should be given to the supervision of the conditions which prevail on these farms and under which the grain trade is carried on than has been possible in the past. A matter for investigation in this area is the possibility of the conveyance of the infection by field rodents and should these be found infected the institution of measures for the protection of their natural enemies must be considered. It is hoped that it will be possible to carry out investigations with regard to this matter during 1925.

SEYIDIE PROVINCE.

Mombasa.—One case of plague occurred in an Indian in January. No source of infection could be traced, and throughout the year no infected rats were found, though routine examinations of spleen smears were carried out.

JUBALAND PROVINCE.

A small outbreak involving 13 cases and 11 deaths occurred at Kismayu in November.

4.—ANTI-PLAGUE MEASURES.

(a) METHODS ADOPTED IN TOWNSHIPS.

The methods adopted for the destruction of rats were similar to those adopted in previous years, i.e., poisoning with barium carbonate and trapping with "break back" traps. The number of rats destroyed in the three larger towns during 1923 and 1924 were as follows:—

	1923.	1924.
Kisumu.	7,911	5,591
Nairobi.	12,458	17,738
Mombasa.	14,536	10,957

Of much greater importance however than the destruction of rats is the work which in these townships is gradually being carried out with regard to the structural improvement of buildings where such is possible and the demolition of insanitary structures where reconstruction is out of the question.

(b) METHODS ADOPTED IN NATIVE RESERVES.

Rat-destruction campaign in the Central and North Kavirondo Districts.

As will be seen from the tables given below this campaign was continued during 1924, though with less success as regards numbers destroyed than in former years.

The totals for the past four years are as follows:—

Rats destroyed in Central and North Kavirondo.

	1921. 6 months only.	1922. 12 months.	1923. 12 months.	1924. 12 months.
Central Kavirondo.	983,387	1,456,586	751,920	627,122
North Kavirondo.	1,085,704	2,118,616	1,816,493	1,303,288

In the Annual Report for 1923, it was stated that a detailed analysis of the results of the campaign in relation to the incidence of the disease might be attempted when the figures for 1924 became available; careful consideration of all the factors involved only suggests, however, that no definite conclusions as to its effect can be drawn. Plague occurred in these districts during 1924, and though it would appear that the incidence was less than in previous years, it would appear also that the same was the case in the Colony generally.

(c) INOCULATION WITH ANTI-PLAGUE VACCINE.

65,750 doses of anti-plague vaccine were issued from the Laboratory during the year for use in various parts of the country. No figures are available with regard to the degree of immunity which inoculation may provide. The vaccine used was manufactured at the Laboratory in Nairobi.

VI.—SMALLPOX.

Three cases of small-pox were treated at the Infectious Diseases Hospital at Mombasa during the year. These cases were Indian Passengers from Bombay and were removed from the ships on arrival at the port. One case was reported as having occurred in the Malindi District on the Coast in July.

With these exceptions the country as far as is known remained free of small-pox throughout the year.

The possible introduction of small-pox from India is a constant source of uneasiness. The voyage from Bombay is not sufficiently long for persons infected before embarking to develop the disease before arrival at Mombasa in all cases.

VACCINATION.

35,767 vaccinations were performed as compared with 56,345 in 1923. The lymph used was in all cases produced at the Laboratory in Nairobi and as usual proved to be exceedingly satisfactory. Full details with regard to the results of the vaccinations performed are given in the Annual Report of the Bacteriological Laboratory.

RAT DESTRUCTION RETURN: CENTRAL KAVIRONDO DISTRICT, 1923.

Location.	Chief.	Huts.	January.		February.		March.		April.		May.		June.		July.		August & September.		October.		November.		December.	
			Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.
Alego.	Ngonga.	14,777	11,710	0.79	14,960	1.01	—	—	10,575	0.71	23,430	1.58	—	—	5,630	0.38	9,020	0.61	7,810	0.52	17,189	1.16	21,070	1.42
Asembo.	Odindo.	5,405	3,720	0.68	6,210	1.15	6,736	1.24	—	—	—	—	—	—	4,710	0.87	5,530	1.02	3,248	0.59	—	—	10,140	1.87
North Gem.	Ogada.	9,077	—	—	12,450	1.37	6,364	0.70	8,350	0.91	7,419	0.81	2,260	0.24	8,861	0.97	4,500	0.49	4,020	0.44	10,610	1.16	—	—
South Gem.	Ndeda.	6,380	5,220	0.82	8,460	1.33	—	—	13,560	2.12	6,500	1.01	—	—	6,780	1.06	5,000	0.78	2,360	0.36	1,160	0.18	11,030	1.72
Kadimu.	Okello.	2,224	1,317	0.59	—	—	6,310	2.83	1,760	0.83	2,840	1.27	—	—	2,460	1.10	2,100	0.94	—	—	—	—	—	—
Kajilu.	Awuor.	2,055	—	—	—	—	—	—	—	—	540	0.26	—	—	—	—	480	0.23	—	—	1,300	0.63	—	—
Kano.	Amimo.	15,484	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,510	0.09	—	—	1,355	0.08	—	—
Kisumu.	Johanna.	5,800	5,990	1.3	5,910	1.02	—	—	8,260	1.42	4,510	0.77	—	—	6,652	1.14	4,780	0.82	—	—	7,510	1.29	—	—
Nyakatch.	Kere.	7,647	—	—	1,830	0.24	2,200	0.28	2,090	0.27	460	0.06	400	0.05	437	0.05	290	0.03	2,944	0.38	—	—	3,840	0.50
Nyangori.	Sonono.	1,927	—	—	—	—	—	—	2,270	1.17	—	—	—	—	—	—	—	—	1,360	0.70	670	0.34	—	—
Sagam.	Orao.	1,840	2,210	1.21	1,460	0.80	1,250	0.67	1,430	0.77	3,673	1.99	1,076	0.52	—	—	1,800	0.96	2,900	1.57	1,990	1.08	—	—
Sakwa.	Olulo.	4,724	1,330	0.29	4,920	1.04	—	—	—	—	—	—	—	—	1,090	0.23	4,310	0.91	—	—	—	—	3,110	0.65
Samia.	Kadima.	10,630	5,630	0.53	19,340	1.82	3,050	0.28	13,280	1.24	—	—	8,440	0.79	13,030	1.22	30,530	2.87	10,530	0.99	31,270	2.95	17,000	1.59
Seme.	Nyawara.	10,145	3,300	0.32	—	—	4,500	0.44	—	—	—	—	—	—	—	—	3,080	0.30	2,766	0.27	4,650	0.45	—	—
N. Ngenya.	Mganda.	8,311	7,270	0.87	10,520	1.26	9,520	1.14	6,930	0.83	20,800	2.50	17,260	2.07	5,070	0.61	10,330	1.24	15,030	1.80	11,730	1.41	—	—
S. Ngenya.	Donji.	2,172	1,610	0.79	3,400	1.57	1,960	0.90	2,660	1.22	—	—	4,560	2.09	989	0.45	5,960	2.74	3,532	1.62	4,109	1.89	—	—
Nyoma.	Nathan.	4,288	—	—	6,530	1.50	—	—	2,368	0.57	2,160	0.50	—	—	3,750	0.87	2,090	0.46	6,250	1.45	—	—	1,590	0.37
Total.		112,886	49,307	—	95,990	—	41,890	—	73,533	—	72,332	—	33,996	—	59,459	—	101,310	—	62,780	—	93,543	—	67,780	—

GRAND TOTAL. 751,920.

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RAT DESTRUCTION RETURN:—NORTH KAVIRONDO AND NANDI RESERVES, 1923.

LOCATION.	CHIEF.	HUTS.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
			Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.	Number of Rats.	Number per hut.
Wanga.	Mumia.	7,399	7,566	1.02	1,100	0.1	6,219	0.83	4,075	0.55	10,293	1.4	10,020	1.35	4,960	0.67	—	—	3,903	0.53	14,865	2.0	—	—	5,000	0.67
Marama.	Mulama.	8,579	8,769	1.02	5,595	0.7	1,400	0.16	2,628	0.3	20,964	2.5	21,823	2.55	7,101	0.82	6,581	0.76	12,758	1.49	12,550	1.5	9,452	1.1	8,660	1.009
E. Kakamega.	Osore.	2,745	7,078	2.57	1,807	0.7	3,235	1.17	3,521	1.2	4,264	1.6	3,556	1.29	3,099	1.12	2,330	0.84	3,480	1.27	7,800	2.9	3,800	1.38	2,900	1.06
Watsotso.	Wambani.	1,635	4,700	2.87	—	—	—	—	7,169	4.38	817	0.5	790	0.45	300	0.18	—	—	3,227	1.97	13,601	8.3	1,379	0.8	1,366	0.8
W. Kakamega.	Mulimo.	5,235	17,348	3.51	10,501	2.0	1,304	0.24	15,451	2.95	16,019	3.1	7,981	1.52	3,285	0.62	4,538	0.86	6.683	1.28	—	—	5,500	1.05	5,800	1.1
Mukulu.	Ropando.	1,456	860	0.58	—	—	—	—	8,718	5.98	1,140	0.8	1,100	0.75	1,062	0.73	—	—	1.200	0.83	2,490	1.7	1,150	0.7	1,100	0.75
Kakalelwa.	N'dombi.	1,699	1,200	0.70	—	—	—	—	2,490	1.46	1,832	1.1	1,490	0.87	1,060	0.62	159	0.09	4,670	2.74	2,300	1.4	1,550	0.9	—	—
Kabaras.	Mwanza.	2,438	4,150	1.70	5,476	2.3	3,385	1.38	5,140	2.1	1,820	0.8	2,390	0.98	1.286	0.52	—	—	5,133	2.10	—	—	2,800	1.1	—	—
N. Kitosh.	Muranga.	8,672	11,655	1.34	2,283	0.3	3,140	0.36	—	—	3,500	0.4	11,285	1.30	20,370	2.34	—	—	—	—	8,240	0.9	8,830	1.01	7,510	0.86
S. Kitosh.	Sudi.	6,550	24,117	3.68	7,965	1.2	2,128	0.32	11,031	1.68	10,749	1.6	27,984	4.12	1,880	0.28	5,639	0.86	15.757	2.40	21,691	3.3	28,250	4.3	16,350	2.49
Wamia.	Elikula.	5,700	9,280	1.62	—	—	—	—	5,334	0.93	16,605	2.8	12,457	2.19	12,682	2.22	—	—	7,420	1.30	18.407	3.2	—	—	5,971	1.04
Maraach.	Oduya.	4,699	3,940	0.83	—	—	—	—	5,956	1.26	3,970	0.8	—	—	11,670	2.48	1,990	0.42	3,750	0.80	6,480	1.4	7,066	1.5	7.500	1.59
Ohayo.	Okwara.	4,873	11,100	2.27	—	—	140	0.02	1,893	0.38	22,815	4.7	18,734	3.87	7,676	1.57	8,000	1.64	7,870	1.62	14,396	2.9	1,900	0.39	3,108	0.63
Waholo.	Were.	2,721	—	—	3,300	1.2	1,170	0.42	—	—	3,012	1.1	3.014	1.10	175	0.06	1,456	0.53	1,763	0.65	2,380	0.9	—	—	1,700	0.62
Tiriki.	Amiani.	4,800	5,990	1.24	7,440	1.5	—	—	20,580	4.2	12,400	2.6	12,839	2.67	4,913	1.02	3,651	0.76	—	—	—	—	41,782	8.7	—	—
S. Maragoli.	M'nubi.	5,727	23,057	4.02	13,773	2.5	—	—	20,800	3.5	24,567	4.1	20,442	3.45	5,140	0.86	4,487	0.75	22,420	3.79	35,310	5.9	13,340	2.2	16,200	2.73
Kisa.	Kuta.	1,678	5,480	3.26	2,175	1.3	1,010	0.60	4,000	2.3	8,102	4.9	4,780	2.85	2,017	1.2	1,780	1.06	4,423	2.64	4,270	2.5	2,010	1.2	2,800	1.07
N. Maragoli.	Shivachi.	9,205	33,997	3.69	7,260	0.8	16,225	1.76	44,425	4.8	13,974	1.5	28,378	3.10	1,200	0.13	3,370	0.35	23.315	2.53	14,550	1.6	12,150	1.3	13,960	1.51
Bunyore.	Songoro.	9,359	28,293	3.02	11,200	1.2	8,400	0.89	35,437	3.7	27,881	2.9	36,736	3.92	45,587	4.87	2,553	0.27	43,234	4.72	34,400	3.8	24,000	2.5	20,000	2.13
Kakamega Township.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	115	—	72	—	86	—
Total.	—	95,170	208,580	—	79,875	—	47,756	—	198,649	—	204,724	—	225,019	—	135,463	--	46,534	—	171,006	—	213,845	—	165,031	—	120,011	—

Grand Total. 1,816,493.

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VII.—CEREBRO - SPINAL FEVER.

Forty-one cases with twenty-two deaths were recorded during the year as compared with fifty cases and twenty-seven deaths in 1923. The incidence was in all cases sporadic.

VIII.—ANTHRAX.

A total of 92 cases with eight deaths was recorded. Both types of the disease were met with.

IX.—INFLUENZA.

The total number of cases returned as having been treated at Hospitals and dispensaries is 5,079 with 11 deaths. As most of the cases were treated as out-patients the diagnosis must in many instances have been doubtful. The 11 deaths recorded occurred at five different stations. No severe epidemics occurred.

X.—PNEUMONIA.

The figures for all hospitals for the past two years are as follows:—

Year.	Cases.	Deaths.	Death rate per 100 cases.
1923	1,095	262	23.9
1924	1,036	178	17.1

In his Annual Report for Nairobi the Medical Officer of Health notes that "As in past years pneumonia has again caused more deaths than any other single disease, being responsible for 141 or 26.1% of the total number of deaths. In 1923 deaths from pneumonia totalled 164 or 31.5%. Although there has been a steady decline in the number of deaths attributed to this disease during the last three years it is still responsible for an enormous wastage of life."

In Mombasa, pneumonia and broncho-pneumonia were responsible for 138 deaths or 24.3% of all deaths. It is of interest to compare these figures with those for England or Wales where in 1923 only 16.2 per cent. of the total deaths recorded were due to bronchitis, pneumonia and other disease of the respiratory system excluding tuberculosis. Nairobi on account of the altitude at which it is placed has what may be considered a sub-tropical climate. Mombasa is essentially a tropical town.

XI.—THE ENTERIC GROUP.

Ninety cases of this group of diseases were treated during the year and among this number eight deaths occurred. Of the above cases 81 occurred either among Asiatics or natives. The number of cases treated in the previous year was 27.

Apart from a small outbreak in a railway camp which involved 12 cases the incidence of the disease was sporadic.

The results of Widal tests made at the Laboratory during the year are as follows:—

Typhosus.	67
Paratyphosus A.	4
Paratyphosus B.	2
Paratyphosus C.	—

XII.—TYPHUS.

Seven cases of the typhus like disease of the Country were reported with one death. Six cases occurred amongst Europeans and one in a native; all came under observation in Nairobi. The death was of the native the first native case that has come to notice.

XIII.—DYSENTERY.

918 cases with 54 deaths were returned from all stations.

The great majority of the cases have been returned as being amoebic in origin, but it is by no means certain that this is entirely correct. The point is touched upon by the Senior Bacteriologist in his report. There is no doubt that many cases of the mildest description occur which, from the presence of blood and mucous, are classed as dysentery.

One outbreak of some magnitude occurred in the Chuka District where several villages in a considerable area were affected by an acute type of the disease. The medical officer treated 112 cases on the spot and deaths approximating 70 were reported by the local chiefs and others. The infection was reported as being amoebic and symptoms abated with emetine or bismuth emetine iodide.

It is a matter for congratulation that dysentery did not occur to any great extent in the construction of the Thika Nyeri Railway Extension where on account of its lesser altitude and consequently higher temperature the disease might have assumed the proportions attained by pneumonia in the early days of the Uasin Gishu Construction.

XIV.—UNDULANT FEVER.

In all 14 cases were reported in the year under review as against 13 in 1923. The distribution was as follows:—

Nairobi.	8
Mombasa.	2
Nyeri.	2
Eldoret.	1
Kisumu.	1

The Laboratory returns show that the infections were:—

Micrococcus melitensis ..	9	cases.
Micrococcus para-melitensis. ..	5	cases.

The relationship between the Micrococcus melitensis and the Bacillus abortus, Bang. in Kenya requires investigation.

XV.—MALARIA.

The number of cases returned as having received treatment for malaria at Government Hospitals and Dispensaries in 1924 totalled 18,906 as compared with 18,330 in 1923. The number of deaths among these cases was 40 and 37 respectively.

The case returns for admissions to Hospital in which the particular infection has been identified are as follows:—

Subtertian.	2,010
Benign tertian	260
Quartan.	67

The Laboratory figures are:—

Subtertian.	308
Benign tertian	47
Quartan.	19

Kisii reported a larger incidence of benign than of subtertian malaria during the year, but with that exception the subtertian parasite was by far the commonest met with. The preponderance of benign tertian that had been reported on previous occasions at the Coast was not met with.

An interesting series of cases of malaria in which the temperature remained normal or sub-normal was observed at the Native Hospital, Nairobi. The patients were all Meru labourers invalided from Kibwezi. Subtertian parasites were present and in two cases benign tertian was superadded. Clinically there was little to suggest malaria.

The anti-malarial work at Kisumu which was described in last year's report has been continued and the area already reclaimed has been maintained. There is no difficulty in persuading the natives to take over and plant up the reclaimed area; trouble arises when the work of maintenance of ditches and water channels has to be undertaken.

At Nairobi the usual routine anti-malarial work has been continued. The mosquito survey of Nairobi which was referred to in the 1923 report has been continued during the year. Dr. van Someren has most kindly taken over the complete direction of the work and his report when completed will prove of the utmost value as affording the necessary data on which a systematic anti-malarial campaign can be based.

At Mombasa the medical officer of health is obtaining detailed information with regard to the centres of mosquito breeding. A collection of mosquitoes has been made and will be continued. Appendix "C" gives a list of the mosquitoes found hitherto at Mombasa. Identification has been carried out at the British Museum. It will be noted that Anopheles costatis is the only anopheles so far obtained.

XVI.—BLACKWATER FEVER.

The returns for the past four years are as follows:—

Year.	Cases.	Deaths.
1924.	20	9
1923.	27	6
1922.	39	10
1921.	28	5

Eight of the above cases occurred in Europeans with 4 deaths.

XVII.—TRYPANOSOMIASIS.

The total number of hospital cases was 70 as against 103 in 1923 and 25 in 1922. Of these cases 67 occurred in South Kavirondo. Bayer 205 and tryparsamides have been used in the treatment of a number of these cases, but it is still too early to speak definitely of the results obtained. Careful records are being kept.

A journey of investigation was made on the Central Kavirondo Coast during the year by Dr. Carpenter, Senior Medical Officer, sleeping sickness, Uganda, on which he was accompanied by the District Medical Officer, Central Kavirondo. The results of this journey have been published in the Bulletin of Entomological Research Vol. XV. part 2.

The Medical Officer, South Kavirondo, reports that many more cases than have been admitted to hospital have been examined and await treatment. There appears to be little doubt more cases of sleeping sickness exist than have hitherto been suspected and that the disease is increasing. The following is taken from the report of the Medical Officer:—

> "The main centres of infection are on the Miriu River in Karachonya, on the Aloach River and at Homa Point, in the same location. Minor centres are in Kochia (Aloach River) and in Kaniadoto, on the Kuja, and in Kasigunga. There is evidence that the disease is slowly increasing. Its reappearance in Kaniadoto, after a lapse of about ten years, in disquieting."

The expected arrival in 1925 of an entomologist should enable a definite plan of campaign against trypanosomiasis to be framed.

XVIII.—RELAPSING FEVER.

Ninety-one cases were reported as against 65 in 1923 and 42 in 1922. The distribution was as follows:—

	1923.	1924.
Eldoret	—	2
Fort Hall.	38	23
Machakos.	1	—
Nairobi.	4	40
Kilindini.	1	—
Kismayu.	4	—
Kisumu.	—	9
Kakamega.	—	4
Chuka.	17	13
	65	91

In addition to the above a number of cases occurred among Kavirondo labourers at Lake Magadi. On investigation it appeared that these labourers had been infected before leaving the Nyanza Province and on inspection of the huts in which they had lived for a few days while in Kisumu a number of these were found to be infected with ticks of the genus ornithodorus. In November relapsing fever was gazetted as a notifiable infectious disease. Efforts have been made to free the labour camps in Kisumu of ticks, but as the huts in these camps are constructed only of sun-dried brick it is unlikely that any measure short of their complete replacement by permanent structures will prove entirely satisfactory. The immediate position was dealt with by scraping off and renewing the mud and cow-dung plaster and by digging up and relaying the earth floors. Vermicol was mixed with the material for the walls and floors. Arrangements were made by which replastering was to be carried out every fortnight.

XIX.—LEISHMANSIASIS.

No cases of Kala-azar or dermal leishmaniasis have been reported during the year.

XX.—WHOOPING COUGH.

Seventy-four cases were reported from five stations.

XXI.—ENCEPHALITIS LETHARGICA.

Two cases both of which terminated fatally occurred at the European Hospital, Nairobi, which from the clinical picture were undoubtedly Encephalitis Lethargica. One patient came from Kisumu and the second from the Naivasha district.

A suspected case of the disease had occurred at Mombasa in 1923.

XXII.—HELMINTHIASIS.

No special investigations were carried out during the year.

XXIII.—DIPHTHERIA.

During the year this disease was first identified in Kenya, 11 cases being reported of which 6 occurred in Nairobi and 5 in the adjoining districts. Six of the cases were European, 2 Asiatic and 3 African. With the exception of 2 cases the disease was mild in type and no deaths occurred.

The report of the Medical Officer of Health, Nairobi, is as follows:—
The history of the disease is as follows.

During September two Indians in Nairobi underwent operation for tracheal obstruction. The diagnosis was uncertain and both cases ended fatally. In October another Indian was admitted into hospital with laryngeal obstruction for which tracheotomy was performed. Suspicion having been aroused by the two cases in the preceding month a careful bacteriological examination was made and "diphtheroid" bacilli were detected. Against the diagnosis of diphtheria was the patients statement that the illness had lasted for some time. In favour of the diagnosis was some degree of cardiac debility and the improvement which followed the administration of diphtheria antitoxin.

The next case was an African infant who lived near Mathari, also with laryngeal obstruction necessitating tracheotomy, from this case also "diphtheroid" bacilli were obtained.

The third case was a native from Pangani, who had the signs and symptoms of an ordinary follicular tonsillitis, quite unlike diphtheria, but in this case again "diphtheroid" bacilli were isolated from the throat. The fourth case was a native child from the Police Lines, and "diphtheroid" bacilli once more were in evidence. In none of these cases could a pure culture be isolated, so tests for virulence could not be carried out.

The fifth case was a European child living on the outskirts of Nairobi. In this case a typical diphtheritic membrane was present and the clinical diagnosis was confirmed by bacteriological examination. A pure culture of a bacillus was isolated showing all the characteristics of the diphtheria bacillus and its identity was confirmed by the inoculation of guinea pigs. From this date onwards it was possible in each case to confirm the diagnosis by bacteriological examination.

The sixth case was a European adult residing at Kabete. The seventh case was a European child from Ruiru, a cousin of the fifth case with whom she had been in contact some weeks previously. The eighth case was an Arab infant living in River Road. The ninth case was a European adult residing in Anderson Road. The tenth and eleventh cases were European children, who were sisters, and who lived on the Goss Estate on the outskirts of Nairobi.

With the exception of the two instances mentioned above, where cases came in contact with each other, all the other cases were sporadic and no connection between them could be established. The cases occurred over a comparatively wide area and attacked all three races.

The outbreak, at its commencement gave rise to considerable anxiety, more particularly in regard to hospital accommodation and the provision of an adequate supply of antitoxin. Fortunately the outbreak did not assume serious proportions and the ordinary emergency measures proved adequate.

IV.-NATIVE LABOUR.

(a) CONTRACT LABOUR.

(1) *Recruiting, Inspection and Housing of Recruits.*—All labourers recruited by an agent for an employer must be medically examined before a contract is entered into. The following are the figures for the past three years of the numbers examined and rejected at Kisumu where the largest numbers of labourers are examined:—

	1922.	1923.	1924.
Total number examined.	17,874	15,949	13,268
Number passed.	13,619	14,442	12,056
Number rejected.	4,255	1,507	1,212
Percentage of rejects.	23.8	9.4	9.1

The causes for rejection in 1924 were as follows:—

Under age.	439
Poor physique	378
Scabies.	70
Disabling physical deformities	67
Ulcers.	51
Old age.	38
Defective vision	25
Gonorrhoea.	13
Syphilis	7
Elephantiasis	13
Hydrocele, Herniae, etc., ...	44
Enlarged spleen.	7
Abcesses.	6
Yaws.	1
Other conditions.	47
	1,212

The housing of labour recruits at Kisumu presents a problem which will require to be dealt with in the near future. The recruits are housed in camps consisting of sun-dried brick houses with corrugated iron roofs. Towards the end of the year some of these camps were found to be infested with ticks of the genus Ornithodorus, and a number of cases of relapsing fever occurred. The infested camps were evacuated, and an attempt has been made to render them habitable by laying concrete floors and rendering the walls with cement. On account of the fact that the walls carrying this rendering are not of permanent construction, it is doubtful if this measure will be of lasting value, and sooner or later it will become necessary either to provide the recruiters with plots on a sufficiently long lease to justify the erection of permanent buildings or for Government itself to build a permanent camp.

(2) *Inspection of the Sanitary Conditions under which Native Labour is employed.*—Valuable work has been carried out by the Labour Inspectors of the Native Affairs Department, and on the whole conditions would appear to be improving. The importance of an increased and more varied dietary, and particularly the importance of including meat in the ordinary ration, is being more generally appreciated. The conditions under which labour is housed, however, still leave much to be desired, but with regard to this matter also the outlook is more hopeful. Planters and farmers have, for the most part, recovered from the setback caused by the trade depression of previous years, the agricultural industry generally is on a sounder footing, and there is a considerable possibility that the next few years should see the initiation of a fair number of housing schemes on at least the larger and more developed estates. Type-plans for the housing of labourers on estates have been prepared by the Medical Department for the guidance of employers of labour, and will later be issued in pamphlet form.

(b) CASUAL LABOUR.

LABOUR EMPLOYED IN TOWNSHIPS.

The housing scheme for Africans in Nairobi, which has been under consideration by the Nairobi Municipality for some time, was not carried into effect during 1924. At the date of writing, however, a loan of £16,000 has been definitely sanctioned, and before the end of 1925 a considerable amount of good and sanitary accommodation should be available.

Great progress has, however, been made by the Uganda Railway not only in Nairobi, but at many places on the line, with regard to the provision of African housing, and the accommodation which the Railway has provided should serve as a stimulus and an example to private employers generally.

In the smaller townships the housing of Africans is, as a rule, unsatisfactory. The only satisfactory solution would appear to be the adoption generally of the method which experience has shown to be necessary in Nairobi, that is the erection of permanent housing by Government, or should such be established by the local authorities concerned.

LABOUR EMPLOYED ON RAILWAY CONSTRUCTION.

(A) UASIN GISHU RAILWAY CONSTRUCTION.

The work of construction of the Uasin Gishu Railway continued throughout the year. The number of labourers employed on this work was, however, comparatively small, and as an efficient hospital service was in being, and sanitary control had been well established by the routine of the two preceding years, it was not found necessary to continue the secondment of a Government Medical Officer for duty on this railway. The medical and sanitary services were therefore throughout the year in charge of the Medical Officer engaged by the Contractors, by whom the usual monthly returns of admissions to hospitals, deaths, etc., were submitted.

The following is quoted from the Report for 1924, as compiled by the Medical Officer of the Uasin Gishu Railway Construction, Dr. H. A. Boedeker:—

> 'Towards the end of January, 1924, the railway track had reached Eldoret Township. It will therefore be understood that the prevailing conditions and general character of the work on the Line during 1924 were comparatively easier in every respect to what had been experienced and effected during 1923. Further, the prevailing climatic conditions were much more favourable from a health point of view. The rainfall for the first half of the year was practically negligible, and it was only in the months of July, August and September that the climatic conditions were very severe."
>
> "On the whole the general standard of health of the labour employed was satisfactorily maintained throughout the year."

TABLE SHOWING MONTHLY AVERAGE LABOUR STRENGTH WITH SICKNESS AND DEATH RATES.

	Monthly Average Labour Strength.	Total number in Hospital.	Percentage of Sickness.	Total Deaths.	Death Rate per 1,000 per month.
January.	7,189	270	3.7	8	1.1
February.	7,179	225	3.1	4	.55
March.	7,579	204	2.6	5	.65
April.	8,506	206	2.4	7	.82
May.	9,839	268	2.7	7	.71
June.	7,909	284	3.5	4	.5
July.	6,673	356	5.3	8	1.2
August.	4,808	219	4.1	9	1.8
September.	3,332	162	4.8	7	2.1
October.	2,768	139	5.0	4	1.4
November.	2,834	89	3.1	—	—
December.	2,524	55	2.1	1	.39

Mean average of Labour employed for the whole year.	5,929.
Annual Death Rate per 1,00.	10.79

It will be seen from the foregoing table that the death rate shows a much better record than in the previous year, the total number of deaths being 64, out of which 4 occurred in camp and the remainder in hospital.

Pneumonia, as usual, was responsible for the greatest number of deaths, viz. 34 out of the total of 64, or more than 50 per cent. The number of cases admitted as pneumonia was 166.

Influenza was responsible for 249 admissions to hospitals, of which 6 died.

Malaria is given as the cause of 146 admissions, most of which are supposed to be cases of recrudescence of previously acquired disease and not fresh infection.

Dysentery accounted for 50 admissions, with 6 deaths.

Chicken-pox was prevalent; the cases were mild in character, but as they were all admitted to hospital for the sake of isolation, the number of cases, 135, raises the recorded sickness rate of the labour higher, by that figure, than would otherwise have been the case.

(B) THIKA-NYERI RAILWAY CONSTRUCTION.

Construction of the extension of the Thika Railway towards Nyeri was commenced at the beginning of 1924, and continued throughout the year. In this case the engineering work was carried out departmentally by the Uganda Railway, and all medical and sanitary arrangements became directly the business of Government.

Plans and sites for hospitals were fixed well in advance of the engagement of labour, and buildings erected before engineering work had begun. Sanitary rules for labour camps, together with regulations for the housing, feeding and clothing of native labourers, were communicated to prospective contractors before contracts were issued.

Dr. V. M. Fisher, who had had the previous experience of Medical Officer in charge of the Uasin Gishu Railway during 1923, was seconded for duty on the Thika-Nyeri Railway.

The Report submitted by him, in response to a request from the Secretary of State for the Colonies for information concerning the health of natives employed on the construction, supplies an admirable description of the conditions which prevailed up to the date on which the Report was compiled. It has already been forwarded in extenso to the Secretary of State: the following extracts are of importance:—

> "The Thika-Nyeri Railway Construction was begun in January, 1924. During the whole of this month only a few hundred men were employed on the work; the staff and offices were still in Nairobi, and the hospitals were being built just ahead of requirements.
>
> The labour camps have varied in number from about 20 at the end of February to 33 at the end of July; the population of each camp has ranged from 50 to 800. The larger camps have been divided into two or more sections, each separate from the other, in such a way that in no case are there more than 400 men in any one section. The camps have been sited, built and maintained in accordance with the "Appendix to Specifications," the terms of which will be found below, and on the whole have been very satisfactory."

The sickness and death rates have been consistently low; numbers in hospital and the deaths have been as follows:—

Month.	Labour.	In Hospital.	Percentage.	Deaths.	Percentage per month.
January.	304	2	0.66	0	0.00
February.	1,070	9	0.84	1	0.09
March.	2,922	43	1.47	2	0.07
April.	4,865	47	0.99	3	0.06
May.	6,528	74	1.13	11	0.17
June.	7,561	97	1.28	10	0.13
July.	7,336	138	1.88	14	0.19
August.	6,025	124	2.06	15	0.25
September.	5,221	95	1.82	5	0.10
October.	4,436	91	2.05	9	0.20
November.	3,438	70	2.04	5	0.15

From these tables it will be seen that the estimated sick rate of 1½% of the labour maximum has been very closely adhered to, as 1.83 is the highest figure recorded; this occurred in the unhealthiest time of the year and was easily dealt with.

The death rate compares favourably with that of previous railway construction in this country, and probably with the general death rate of the colony. It must be pointed out that, as is noted in the Railway Magistrate's reports, the number of deaths to the extent of roughly 16% is largely contributed to by the raw natives themselves, who do all they possibly can to avoid obtaining proper medical treatment.

The rise of the curve is according to expectation and its drop follows the drop in the number of labour employed. The variation in hospital population is always about a month behind the labour curve. At the end of November most hospital patients were cases of ulcers and neglected sores, which take months to get well and form a continually rising group, not so much because their incidence is increasing, as because they accumulate and the ones admitted even months ago are not yet fit to be discharged.

The general conditions and housing of the labour are better than any that one has seen throughout the country and are superior to those which are found in the reserves or on an ordinary farm.

The way in which these conditions have been brought about is set out below.

Conditions Governing Camps.—

Some weeks before any work was begun on the Construction meetings were held between representatives of the Uganda Railway, the Native Affairs Department and the Medical Department, at which the conditions that were to be observed by contractors in regard to the health and welfare of their labour were agreed upon. These conditions were embodied in an Appendix to the Engineering Specifications, which was issued to all contractors for perusal before they submitted tenders and was also issued to all Government employees who might be put in charge of labour.

These conditions have been carefully and strictly enforced by inspections which are carried out frequently and regularly by the Railway Magistrate and more occasionally by the Medical Officer.

As regards the welfare of their labour the contractors almost without exception have carried out most fairly the spirit and letter of these conditions, and when exception has been taken to any detail or irregularity the required improvements have been made without protest or delay. The irregularities that have come to notice have nearly always resulted from ignorance or stupidity, rarely if ever from wilful default. The contractor knows quite well that if he does not look after his labour properly he will in a very short time have no labour to look after, and the labour is perfectly aware as to what it is entitled to receive from its employer.

It is now proposed to go through the different paragraphs of the Appendix referred to with appropriate comments on each.

"1. *Rations.*—All African labour will receive:—

Maize Meal.	2 lbs. daily.
Meat.	½ lb. daily.
Chiroko or Beans. ..	¼ lb. daily.
Ground Nuts.	1 oz. or Ghee ½ oz. daily.
Fresh Vegetables.	1 lb. weekly.
Salt.	1 oz. weekly.

("Fresh Vegetables" includes Bananas, Sugar Cane, Potatoes, Sweet Potatoes, Muhogo or Pumpkin)."

Para. 1 lays down the scale of food for all African labour. This scale was subsequently cancelled and the scale shown below was substituted:—

Maize Meal.	2 lbs. per day.
Beans (preferably Chiroko).	2 lbs. weekly.
Ground Nuts.	½ lb. weekly.
Salt.	2 oz. weekly.
Potatoes or other fresh vegetables.	1 lb. weekly.

In lieu of beans the following may be issued:—

(1) 1½ lbs. of fresh meat.
(2) 12 ozs. of biltong.
(3) 1 lb. beans plus 12 ozs. of fresh meat.
(4) 1 lb. of beans plus 6 ozs. of biltong.
or (5) 1 lb. beans plus two dried fish.

In lieu of 8 oz. of ground nuts 4 oz. of ghee may be issued.

In lieu of 1 lb. of potatoes, 1 lb. of any of the following may be issued:—

Sweet Potatoes, Pumpkin, Bananas, Muhogo, Sugar-cane, or Two Lemons.

While it is true that no case of definite food deficiency disease has occurred, yet it is probable that inadequate diet is one of the chief causes, or at any rate a contributing factor, of the disabling ulcers so frequent among the labour.

It is also the fact that the other foodstuffs beside the ration are available in the Maragwa and Fort-Hall sections of this particular district, and the natives avail themselves of this fact to supplement their ration to some extent.

All the employers give meat instead of any of the substitutes allowed by the lower scale, and it is certain that this contributes materially to the bodily welfare of the labourer as it does to his morale.

"Cooking pots and fuel will be supplied by the contractor, and one cook for every 20 men." Over most of the construction there is a plentiful supply of fuel in the dead sisal stumps, which the owners are only too pleased to have removed and burnt. In the Reserve small sticks are available in a sufficient quantity.

The system of cooks works well. The cook's duties are to fetch water and to prepare food; he is also responsible for the cleanliness and tidiness of his hut or huts and their surroundings. In some cases labour has been afraid that cooks will do themselves more than justice in the matter of food, but this suspicion is not now marked and, as the cooks are generally chosen by the gang concerned or are youngsters, an unsatisfactory practitioner will not hold his job for long.

> "2. *Water Supply.*—The contractor will undertake that all his labour receives an adequate supply of water both in camp and on the work. Labour must be prevented from fouling any water supply. Failure in this respect will necessitate water guards, the cost of which will be charged to the contractor."

There has been no difficulty about the supply of water. There are eleven rivers, some of a considerable size, on the 58 miles of construction, besides many smaller streams and springs. At the beginning of the work, before the rains, it was in a few cases difficult to obtain satisfactory water except at some distance from camp, and, as the work had then only just begun, the best places were not known. There was at all times however a supply for all labour that was satisfactory in quantity and quality. Three or four cases of sickness occurred in one camp which were attributed to water and it was afterwards found by local native information that this source was traditionally a bad one. It was not used after this.

No case of fouling a water supply has arisen.

> "3. *Camps.*—All camps must be sited by the Medical Officer. The site of the camp must be levelled, and all grass entirely removed, over an area extending at least 30 feet from the outside row of huts. The type of hut *recommended* is that known as the "kongoni". The approved dimensions of such a hut are: length 20 ft. along the side, excluding the rounded ends; width 16 ft., height 14 feet. This will house 20 men. No other dimensions for a hut of this type will be approved.
>
> "If round huts are built they should be 16 feet in diameter, with 4 feet walls, and roof at an angle of 60 degrees. Cubic space per man must be at least 150 cubic feet in grass-walled huts, 200 cubic feet in mud-walled huts.

"Any other type of housing accommodation must be approved by the Medical Officer before use.

> "Huts must be at least 30 feet apart.
>
> "Not more than 400 men may be housed in one camp. If more labour is required to be housed in any area separate camps must be made at least 100 yards apart.
>
> "Adequate drainage must be provided, and all camps must be kept in a thoroughly clean and sanitary condition. Refuse must be burned or buried.
>
> "The contractor must appoint a person of authority who will be in definite charge of each camp, and responsible for all discipline, cleanliness, sanitation, and internal administration and who can carry out all instructions issued to him on these matters by the Railway or Medical Authorities."

All the camps are sited by the Medical Officer personally, or in case of urgency, when the Medical Officer cannot attend to the matter at once, by the Assistant Resident Engineer who knows the requirements or by the contractor himself if he is known to be a reliable and sensible man.

The following points occur in locating and siting camps. The location depends of course, in the first place on the work. Camps must be near or on the work and, if at all possible, close to the part of the section where the work is heaviest and where, consequently, it will take longest. It is impracticable that men should in any case have to walk more than two miles to their work, owing to the time and energy lost in so doing, and it is very undesirable that they should walk more than one mile. This fact is realised by contractors, who are quite prepared to build two or three camps, or to move their camp from one part of their section to another, with all the attendant disadvantages of these courses; as to run a number of small camps instead of one large one multiplies the expense of supervision, storage, administration and so on, and to move a camp obviously costs a good deal both in time and in material.

Camps should be sited with the following points in view. They should be on high ground which has a slope that is adequate for drainage, but is not so steep as to make it difficult to build the huts. The site should not be rocky if round huts are to be built, as holes cannot easily be dug for the posts. This does not apply to "kongoni" huts and is one of their advantages. It will also be difficult to make latrines and rubbish pits in rocky ground. The camp must be accessible by road so that posho and other stores can be brought to it. Good water must be near and if possible plentiful supplies of building materials and of fuel. If possible the camp should be at least two miles from any considerable swamp; but if it cannot be put so far away without making the men walk far, it is better to put it near the work, as the men will get a certain amount of malaria in any case, if they have to work in or near a swamp, owing to their being bitten during the day while they are on the work.

Three types of housing, as well as tents, are in use on the Thika-Nyeri Railway Construction. They are:—

The round hut.
The "kongoni" hut.
Corrugated iron sheets.

The specifications for the round and "kongoni" huts are laid down above and these specifications have been adhered to throughout the Construction with a few unimportant exceptions where, in small camps and owing to the distance of sisal poles and the absence of suitable timber, huts of a smaller size were permitted to be erected.

One contractor, but one of the largest, obtained permission to use corrugated iron sheets on the understanding that one sheet was provided for each man. This type of housing is largely used on similar work in South Africa and is quite satisfactory, especially over a long section where camp may frequently have to be moved. Each man on a move can carry his own sheet, and a temporary shelter can be made by merely leaning the sheets against each other. This is quite rainproof and very useful in an emergency. For permanent occupation, however, the sheets are usually made use of to form the roof alone, the rest of the hut being made of poles and grass.

Free ventilation and a waterproof roof are the things most to be desired in huts, and they are both supplied in a most satisfactory and efficient way by this type. The objection raised against them is on the score of expense, but as the sheets are not bent or damaged in any way other than by being stained by smoke, they have quite a high selling value when the work is finished. They are recommended to be used more freely. Their use was suggested to the Uganda Railway, but the suggestion was rejected on the score of expense. It is often not realised how expensive grass huts are. Just because the materials cost little or nothing, there is a tendency to take too little account of the very considerable time spent in cutting, collecting and carting the materials and in the actual building, and of the fact that men are constantly being detailed from their proper work to repair defective huts.

The distance demanded, 30 feet, between any two huts, is for the sake of safety in case of fire as well as for free access of air and for general facility in moving about the camp and cleaning up.

It was definitely found on the Uasin Gishu Railway Construction that the sickness and death rates in the larger camps—those from 500 to 800—were much higher than in the smaller ones, and that when an epidemic occurred its severity was much more pronounced in every way; small camps—up to 50—were practically free from sickness of any kind and never had an epidemic. A camp of 600 men or more will always give an undue amount of trouble no matter how carefully it is looked after and managed. The men in any one camp should never exceed 400.

In the Thika-Nyeri district very little special drainage is required if the camp has been properly sited; the district is hilly and the rain water requires hardly any diversion from its natural flow.

> "4. *Latrines.*—Latrines must be provided to the extent of 3% of the labour in camps to be occupied for one month or less, and 5% in all other cases. They will be of the deep pit type, at least 10 feet deep, with an opening 8 by 10 inches. In rocky ground, where deep pits are impossible, shallow trenches, or pans and incinerators, may be used. The latrine must be enclosed by a fence at least 4 feet high. No hut shall be situated more than 100 yards from the nearest latrine. A proper path must be made from the huts to the latrine. The ground around the latrine must be cleared, and kept clear, of bush and grass. The contractor may be given help in supervising the construction and maintenance of the latrines, and sweepers will be supplied when necessary to keep them in a clean condition."

Latrines are still the outstanding failure of camp organisation. It is impossible to make raw natives use them.

With the idea that it was the progressive fouling of the neighbourhood of the latrine that kept the labour from using it, sweepers, whose sole duty is to keep the latrine and its surroundings clean, are issued to all large camps free of charge. But the difficulty has not yet been overcome. Every camp has its proper latrines and they are kept in excellent order for the most part; but they are still not used to any extent. All that can reasonably be asked of the contractor is that he supply latrines as laid down and he see that his camp and its surroundings are perfectly clean and that his labourers do not foul water. It is not fair to make him responsible for the cleanliness of the long grass of all Africa. It is regretted that this is all that has been able to be done at present.

Latrines are of course insisted upon, but this is done more in the hope of educating the more intelligent of the labour to use them than with the idea that they are of any great sanitary value at the present moment for they are not.

The fence is to ensure privacy and decency.

The closeness of the latrines to the camp is demanded so that labour may use them with the least expenditure of time and energy. The path also is asked for to make things as easy as possible, and the clearing is to try to prevent labour from having too easy access to the bush.

In every large camp there is a permanent resident Dresser, unless the camp is so close to a hospital as not to require one, in which case either a Dresser is sent daily to visit the camp, or the daily sick are sent to the hospital for treatment. In small camps the nearest Dresser attends either daily or when sent for.

There is also in every camp a camp headman, whose duty it is to supervise the general condition of the camp, and to go round all the huts three or four times a day to see that there are no sick in them.

The Medical Officer, through the Dresser, assumes entire responsibility for the treatment and disposal of all sick brought to the Dresser's notice. The Dresser is not responsible for rooting out the sick from all the places in which experience has taught us that they will hide; that is the duty of the contractor through his camp headman; but the Dresser has orders to render all possible assistance to the camp headman and to accompany him on his rounds unless prevented by other duties. It is also the duty of all headmen of working gangs to report at once if any of their gang are missing.

Except in cases of deliberate hiding or of running away either to a nearby village in the Reserve or to his home, it is impossible for a sick man to escape observation from treatment, although the utmost ingenuity is exercised by raw natives to do so.

Once a native has reported sick or has been noticed to be sick he is brought before the Dresser, who decides whether he is to be treated and then to return to his work, or is to remain in camp, or is to go to hospital.

Experience in Kenya tells us that, as a rule, on railway construction we do not have to allow for more than 1½% of the total labour on the work being sick at any one time. On this we depend. We can cut our hospital accommodation down to this limit and we can ignore all unfavourable incidence of disease without apprehension, provided that the hospital accommodation is always quickly expansible to any reasonable extent. If we can increase our hospitals at the shortest of notices nothing else matters, provided that the staff arrangements are made on the lines laid down below. The question of expansion is almost entirely one of building materials. If we can get wood and grass when and where we want it the rest is simple. A ward to house 18 people can be erected in four days by 20 natives under these conditions.

If no building materials are available the hospital accommodation should be increased by 50% all round, but even if the hospital is absolutely inexpansible we need not fear, for, in case of any outbreak of serious disease in an epidemic form at a camp, part of the camp affected can always be itself converted into a temporary hospital.

If reliance has to be placed on semi-permanent buildings, a supply of bush tents should be carried either in the hospital store or in the main construction store, for the housing of any personnel that may have to be turned out of their own quarters to make room for sick, or that may have been sent down to staff a stricken camp.

It has been assumed above that we have to supply between 1½% and 2% of beds for the maximum of the labour curve, the exact figure depending on local disease incidence and on whether or not building materials are available. This gives us a rough idea as to how many beds will be required and where concentrations of beds should be located.

We have next to place the Main Hospital. It should be near to where the Chief Medical Officer will live, and it should contain the medical store and be the point from which the administrative medical work is done.

The Main Hospital, and medical headquarters, will actually be located from consideration of the Engineer's Work and Time-Labour Curves. It will probably be near the big earthworks, where the most men are employed for the longest time, and will be central as regards distance.

Other hospitals will be wanted about every 15 miles so that no one will have to go more than 7 or 8 miles to get skilled treatment.

In many cases small dressing stations consisting of, say, two huts are useful. One of the huts is used as a ward and the other for housing the native Dresser in charge. They hold from 4 to 6 beds and are used for slight cases, or as a resting stage for the more serious cases on their way to hospital.

Hospitals, provided they are made of local materials, can be and must be almost indefinitely expansible, and the plans for them must be made with this essential flexibility always before our eyes. The two simplest plans are what may be called "rows" and "radial". In the row type, which may demand a great deal of space, in the first place a row of administrative buildings, office, dispensary, store and so on is made, all of the same size, say, 20 feet by 12; behind them is a row of wards all 16 by 30 feet; behind these again are the rows of kitchens and staff quarters; finally the latrines and rubbish pits. As accommodation is filled, so extra huts of whichever type is wanted are added on to the ends of the respective rows. This is an easy plan on which to build a hospital and it is quite useful and convenient, but it is apt to waste space and therefore, unless this is almost unlimited, it is probably not the best type. It was employed at Mile 118 on the Uasin Gishu Railway Construction.

The best type is probably the radial or some modification of it. In this the office is made near the centre and all the wards radiate from it like the spokes of a wheel. This has the advantages of being economical of space, of allowing each ward to be observed merely by standing at the centre near the office, and of having all the wards equidistant from the centre so that no one is farther away than any other and consequently is not more liable to be neglected from its inconvenience.

Standard buildings are erected. The type ward is 30 x 16 x 14 feet high with a flour space of 480 feet and a cubic content of 4,000 feet. From 12 to 16 beds are put in a ward. This standard size has been found the most convenient from every point of view. It is not too big to be looked after by one Dresser, and a number of moderately sized wards is better than a few big ones as various types of case can be kept apart. The width is determined by 2 rows of 6 feet, beds and a 4 feet gangway down the middle. This size too has an exact diagonal measurement of 34 feet, which helps to get the angles right in setting out. The door, 4 feet x 6 feet wide enough to admit a patient on a stretcher easily, and 6 windows, each 3 feet x 2 feet 6 inches, make 480 square feet of air passage, and there is as well ample ventilation through the interstices of the walls.

Native hospital staff, which term includes both the staff for the hospitals themselves as well as those who are distributed to contractors' camps, is required at the rate of 12.5 per thousand of labour employed. This figure includes all staff—dressers, sweepers, cooks, dhobis, etc.,—but does not include porter labour.

Dressers are issued free to camps because they insure that the sick get attention at the earliest possible moment and because it is found that a native dresser is usually more reliable in his diagnosis and treatment than the European or Asiatic contractor.

In addition to the advantage to the employer in having the responsibility for dealing with his sick taken off his hands, and the advantage to the labourer in being able to get appropriate treatment at a moment's notice, these Dressers act as a most important reserve, which can be drawn on without delay in case of extensive accident or of widespread epidemic; they are then withdrawn from their ordinary duties as required and are sent to the scene of the emergency.

Incidence of Disease.—

There are four important groups of disease which are found on the Construction. Three of them are important because of their frequency and fatality, the fourth because of the amount of disability it causes and the tediousness of its course.

These diseases or groups of diseases are:—

1. *Pulmonary Disease* (including the pneumonias, influenza, bronchitis, etc.)
2. *Diarrhoea and Dysentery.*
3. *Fever* (which has been shown to be, on this Construction, about 90% subtertian malaria).
4. *Ulcer* (usually the result of neglected sores or injuries, which arrive at hospital as definite ulcers: wounds which may be septic or even sloughing, but are recognisable as wounds, are not included in this group).

The four groups together account for about 75% of all admissions to hospital.

Their monthly percentage incidence has been as given below for the whole construction:—

February.	March.	April.	May.	June.	July.	August.	
41.70	39.99	38.48	31.82	26.39	44.30	38.75	for P. D.
12.51	11.39	36.04	14.06	09.28	07.77	07.50	,, D. & D.
08.34	4.65	11.96	33.67	39.44	30.27	26.25	,, Fever.
4.17	3.72	2.08	2.96	10.15	8.62	11.00	,, Ulcers

These figures are percentages for each month for each of the four groups.

It will be seen that, if we could eliminate these four groups of disease, our total sick would fall at once anything from 55% to 85%.

An analysis of 1,187 cases of the four groups, which were those admitted to Makuyu hospital from the time it was opened in March, 1924, until the end of September, 1924, gives us the average of 8.65 days for each case.

Of these cases 439 were Pulmonary Disease, 382 were Diarrhoea and Dysentery, 180 were Fever and 186 were Ulcer.

The 439	cases of	P. D.	spent	3,043	days	in hospital.
,, 382	,, ,,	D. & D.	,,	2,196	,,	,, ,,
,, 180	,, ,,	Fever.	,,	917	,,	,, ,,
,, 186	,, ,,	Ulcer	,,	4,054	,,	,, ,,

These figures tend to modify the complexion of the previous table for while the average admission incidence for the four groups is:

P. D.	37.4
D. & D.	13.8
Fever	22.1
Ulcer	6.0

yet the average hospital-day incidence (which means the number of sick days for the period under consideration for which each of the four groups is respectively responsible) is as follows:—

P. D.	29.7%
D. & D.	21.4%
Fever.	9.5%
Ulcer.	39.6%

which shows that Ulcer, although by number of admissions is much the least of the four, yet, in the number of days occupied by its treatment and the number of beds it takes up, is more important than would otherwise appear.

The average number of days spent in hospital for each case of each disease was:-

Pulmonary Disease.	6.93
Diarrhoea and Dysentery.	5.75
Fever.	5.39
Ulcer.	21.80

The average number of days in hospital, therefore, for any of the first three groups is 6.02 and for Ulcer is 21.80, or, in other words, an Ulcer takes up in time in hospital over 3½ times as long as an average case of the other three groups. So, as the whole four groups comprise from 55% to 85% of all cases in hospital, and as Ulcer is seen to be one which, though it causes no deaths, is responsible for the amount of disability and expense shown above, it would seem that investigation, although one understands this has been fruitless so far, might be directed further in this direction.

Pulmonary disease, which causes nearly half the deaths from all causes, still remains the most serious problem."

That there was so little sickness was partly due to exceptionally fine weather conditions. Had the rainy season been severe there is every reason to believe that sickness and mortality from pulmonary diseases would have been higher.

The route of the railway is through a malarious district, and malarial infection was probably fairly high. The number of cases admitted to hospital cannot represent all the cases infected, although it may be supposed that few severe cases could have escaped admission.

It may be that this exposure to malarial infection of large numbers of natives, although fortunately it did not result in any immediate epidemic, may be reflected in a future increase in the incidence of the disease in those parts of the native reserves to which the labourers have returned.

Spirillum fever did not manifest itself to the extent that was considered likely. This freedom was probably due to the fact that labour camps were not in occupation for any long period, so that the temporary huts had not time to become infested with infective ticks.

V.-MEAT AND FOOD INSPECTION AND CONTROL.

(a) SLAUGHTER-HOUSES.

At Kisumu and Nairobi all beasts are examined both before and after slaughter. At Kisumu the slaughter-house has been improved to some extent, and in Nairobi the necessity for the provision of new and more up-to-date premises has become fully appreciated. Such provision will, however, entail a considerable expenditure and will be dependent on sanctioning of the proposed Municipal loan. At Mombasa the premises remain inadequate, but even so it has been possible to supervise the trade in this town to a considerably greater extent during 1924 than has been the case in previous years.

(b) MILK.

For various reasons, but chiefly on account of the lack of any adequate staff for their enforcement, the new Milk and Dairies Regulations were not brought into operation during the year. In Nairobi, however, the greater proportion of the stock which had hitherto been housed in most insanitary and dilapidated premises within the municipal area has now been removed and the premises closed or demolished. To an increasing extent the milk trade in Nairobi is passing into the hands of European farmers, among whom there are many who are taking a real interest in the production of clean milk.

An account of the number of samples taken and the analysis thereof is given in the Government Analyst's Report. In all cases of adulteration prosecutions were undertaken and convictions obtained. Fines totalling Shs. 2,090/- were imposed.

(C) CONTROL OF FOOD AT PORTS

A very large number of articles were inspected and condemned at Mombasa and Kilindini. A list of these inspections is given in the record of sanitary work carried out at Mombasa.

VI.-SANITATION.

IN NATIVE RESERVES.

No definite progress with regard to the improvement of sanitation in Native Reserves can be recorded. On the other hand, however, it is probable that, owing to increasing contact with European civilization and methods on farms in the settled areas and in factories and workshops in towns, and as the result of governmental activities directed towards increased production in Native Reserves and as the result of the work of various missions, of the Education Department, and of the Medical Department, there is taking place an alteration in the outlook of the native population which, when further sanitary staff is available, should enable progress to be made. In certain areas square houses are commencing to replace round huts, and though the number of the former is small, the departure from custom which the change represents is important, and it is probable that, with practical encouragement in the form of assistance in planning and designing, a fashion for improved housing could be widely established.

A matter of importance, and one which may result in many forward movements, was the passing during the year of the Native Authority (Amendment) Ordinance, 1924, whereby Local Councils with power to impose a local rate may be established in the Native Reserves.

SANITATION IN THE SETTLED AREAS AND TOWNSHIPS.

Improvement in the sanitation of the settled areas and of the townships which are growing up in these areas is largely dependent on the provision of staff and funds, and as no increase of staff became available during the year and but little increase of funds, no marked improvement can be recorded. The condition of the smaller towns is in many respects far from satisfactory. The position is appreciated by Government, but it remains to establish some more satisfactory machinery for promoting local development and ensuring central control than exists at present. The establishment of this machinery is a matter which will require careful attention in the immediate future.

SANITARY ADMINISTRATION.

IN THE SMALLER TOWNSHIPS OF THE SETTLED AREAS: ELDORET, NAKURU, ETC.

It had been hoped that it would be possible to post an European Sanitary Inspector to Nakuru and Eldoret during 1924, but owing to the non-arrival of staff no action in this direction was possible. The Sanitary Administration of these towns remains unsatisfactory. A Resident Magistrate unassisted by technical staff may be willing, but he is unlikely to be able to secure efficient conservancy or any reasonable control over building construction or the sale of meat and food.

IN THE LARGER TOWNSHIPS: KISUMU, NAIROBI, MOMBASA.

(1) KISUMU

As usual, owing to the retention of an efficient technical officer as Superintendent of Inland Revenue and Conservancy during most of the year, the condition of the town as regards general cleanliness has remained fairly good. Unfortunately it was impossible to maintain an European Sanitary Inspector at Kisumu during 1924, and as a result there has been less progress than might have been expected, and district work has been impossible. An inspector will again be posted to Kisumu, however, as soon as staff is available.

In the Annual Report for 1923, it was noted that four matters required particular attention at Kisumu. They were in order of importance as follows:—

An improved water supply.
Improved public latrines.
A water-borne drainage system.
A new slaughter-house.

Of these the last has been provided, and the first would now appear to be likely to eventuate in 1926. New public latrines are expected to be provided during 1925. The water-borne drainage system remains dependent on the improvement of the water supply and the provision of funds.

(2) NAIROBI.

The following paragraph is extracted from the Report of the Medical Officer of Health, Nairobi:—

"During the year some improvement in the public health and sanitation of Nairobi can be recorded, but economic, financial and political factors have again retarded progress to a large extent. It is gratifying to be able to report the development of what may be termed a public health conscience in Nairobi, as reflected in the proposal to raise a municipal loan for public works, a large proportion of which is to be devoted to the improvement of sanitation. The importance of this step cannot be exaggerated as not only is such expenditure essential, but it will prove a most lucrative investment in the future. The provision of the necessary funds and an adequate staff will render the solution of many public health problems a comparatively easy matter, but until such provision is made little real progress can be expected."

Water Supply.—The problem of providing Nairobi with a pure water supply has not yet been solved, and though the quantity has been increased, the quality remains doubtful, and it is necessary to warn the public by means of a weekly notice in the Press that contamination is liable to occur. The installation of a purification plant is under consideration. A point of importance with regard to the water supply of Nairobi is the question of future provision. A daily supply of 1,400,000 gallons is now available, but, while this may be adequate for a town of 30,000 inhabitants, it is to be remembered that Nairobi is growing and that what is sufficient to-day may be totally inadequate in the near future. Whether the present sources of supply can be augmented in order to provide for future requirements, or whether it will be necessary to explore possible resources further afield, are questions which should receive full consideration.

Drainage.—It is satisfactory to record that some progress has been made with the laying of underground sewers in the centre of the town; this work should result in the dismantling of a large number of bucket latrines and their replacement by water closets and a marked improvement in the sanitation of the area served.

The provision of sewage disposal works will require consideration in the near future. At present disposal takes place directly into the Nairobi River below the town, and though investigations have shown that considerable purification is effected as the result of the passage of the river through a large papyrus swamp, it is doubtful whether any large amount of crude sewage could be so dealt with without nuisance.

Markets.—A new native market was opened towards the close of the year, and the old market closed. The new market is a substantial stone building of good design.

European Housing.—The housing of the European population is on the whole satisfactory, and overcrowding is practically unknown. Native quarters and outbuildings attached to European bungalows have received attention during the year, and as a result many improvements have been effected.

Asiatic Housing.—Asiatic housing is for the most part unsatisfactory, and in many areas it would appear that amelioration will only be possible by means of radical improvement schemes. Legislation directed towards the limitation of the density of buildings was introduced during the year.

African Housing.—As stated elsewhere in this Report, marked progress has been made by the Uganda Railway in the provision of good housing for their employees, but with this exception no material progress can be recorded in Nairobi during 1924. Funds for the Municipal Housing Scheme are now, however, available, and if, as is expected, it should be shown that good housing can be provided at an economic rental, this venture by the Municipal Council should be far-reaching in its effects not only in Nairobi, but throughout the Colony.

Town-Planning.—The town-planning of Nairobi, and the production at the same time of a scheme whereby the development of the town and the neighbouring district might be co-ordinated, is a matter to which, it is hoped, attention may be given at an early date. With regard to the town the following extract from the Report of the Medical Officer of Health, Nairobi, is of interest:—

> "The town-planning of Nairobi has been discussed on a number of different occasions during the year, but nothing definite has yet been decided. As the town is developing rapidly the need for a definite and comprehensive scheme is becoming increasingly urgent, and its preparation should no longer be delayed. This has been amply demonstrated during the last few months when it has been extremely difficult to meet the demands associated with conflicting interests.
>
> Piecemeal treatment in the layout and planning of a town is unlikely to give the best results, and efforts of this character often lead to the infliction of serious hardship on industry and the impairment of property values and the amenities of the town. In the preparation of a comprehensive town-planning scheme these dangers can be obviated or at least reduced to a minimum, the public have an opportunity of lodging objections and voicing special needs, and economical development is encouraged.
>
> In this connection the discouraging and unsettling effects upon industry of changes in the zoning and layout of a town must not be forgotten. Building and industrial development will not take place on the lines and at the pace desired until a feeling of confidence in the future stability of such development is engendered in the public mind by legal enactment, which removes any real fear or danger of financial loss.

In the preparation of a town-planning scheme the various sections of a community and all diverse and conflicting interests can be called upon to formulate their needs and requirements and to submit reasonable grounds for their demands. A definite scheme embodying adequate and reasonable provision for present and future requirements, binding upon all parties and ensuring security for the future can then be drawn up and carried into effect by a town-planning authority.

The worth of the advantages and economics that would be derived from a scheme of this nature cannot be estimated. Stable development and the future amenity of the town would be secured and the urgent need for some effort in this direction must be obvious."

GENERAL SANITARY OPERATIONS.

HOUSE TO HOUSE AND GENERAL INSPECTIONS.—

First inspections	1,303
Subsequent inspections	1,975
Trade inspections	6,232
Drainage inspections	73
New buildings	27
Total.	9,610

SANITARY AND OTHER NOTICES SERVED.—

Outstanding from previous year	32
Served during the year	352
Not proceeded with	16
Complied with	313
Outstanding	55

RESULT OF NOTICES AND INSPECTIONS.—

Premises demolished	52
,, closed	10
,, cleansed	51
,, limewashed and painted	39
,, floors relaid	14
,, floors repaired	44
,, roofs repaired	2
,, yards paved	26
,, yards paving repaired	3
,, yards cleansed	37
Latrines provided	41
,, repaired	102
,, cleansed	10
,, demolished	20
,, buckets provided	67
Kitchens provided	10
,, repaired	2
,, demolished	1
Store rooms provided	1
Waste-pipes provided	31
Waste-pipes repaired	14
Baths trapped	3
Sinks trapped	6
New drains tested	8
Open concrete drains provided 1 in. yards	329
,, ,, ,, cleansed ,, ,,	55
,, ,, ,, repaired ,, ,,	80
Concrete splash basins provided	12
Earth drains cut 1 in. yards	32
,, ,, cleansed 1 in. yards.	52
Vacant plots cleaned	10
Deposits of refuse, stones, etc., removed	21
Dustbins provided	43
,, lids provided	14
Soakway pits provided	5
Native huts demolished	25
New native quarters erected	9
,, ,, floors provided	11
Glazed windows provided to native quarters	25
Glazed windows repaired	18
Rain water pipes provided	9

Rain water pipes repaired	4
Eaves gutters provided	9
,, ,, repaired	4
Overcrowding stopped	21
Sleeping in kitchen and stores stopped	26
Trestles for stacking foodstuffs provided	43
Trestles for stacking firewood provided	2
Cattle sheds and Bomas cleansed	4
Cattle sheds and Bomas closed	30
Unspecified nuisances abated	71

PREVENTION AND DESTRUCTION OF MOSQUITOES.—

Areas cleared of long grass and bush	app. 250 acres
Excavations stopped	1
Culverts cleaned	2
,, repaired	1
Swamp areas oiled	5
Mosquito-breeding places dealt with	15
Borrow pits and hollows filled in	11

DISINFECTIONS.—

Premises: number of rooms	67
Number of articles	1,397
Number of articles destroyed	67

LICENSED PREMISES.—

Description.	Number of premises.	Number of inspections.	Applied for.	Approved.	Not approved.
Aerated Water Factories	3	31	3	3	—
Bakeries.	8	80	7	5	2
Butchers.	22	554	50	36	14
Cattle sheds & stables.	54	284	—	—	—
Eating Houses.	30	712	61	44	17
Fishmongers.	8	231	8	6	2
Dhobies.	22	470	16	9	7
Laundries.	6	152	6	5	1
Lodging houses.	—	—	—	—	—
Trade premises.	428	3.220	601	520	81
Vegetable sellers.	15	302	22	17	5
Sweetmeat sellers.	8	196	18	12	6
Total.	604	6.232	792	657	135

With the exception of six bomas all milch cattle have been removed from the township.

FOOD CONTROL.—

Milk samples	329
Aerated water	34
Pipe water supply	2
Filtered water	3
Native market inspections	114
Municipal Slaughter-house.	114
Jeevanjee Market	daily.

FOOD CONDEMNED.—

Milk	12½ gals.
Meat	2,369 lbs.
Ox livers	2
Aerated water	2 bots.
Fish	151 lbs.
Filtered water	1
Fruit	21 lbs.
Vegetables	6 lbs.
Bottled fruit	9 bots.

BUILDING PLANS.—

Plans submitted	133
Plans returned for amendment	68
Approved	127
Disapproved	3
Pending	3

PROSECUTIONS.—

	No. of cases.	Convictions.	With drawn.	Cases. lost.	Penalties.
Under Township Rules.	62	60	nil.	2	Shgs. 2,1997/50. 1 native 8 days.
Under Public Health Ordinance.	15	15	nil.	nil.	Magistrate's order obtained.

Of the seventy-seven prosecutions undertaken, 48 were for selling adulterated milk. Of the accused 47 were Africans and one was an Indian. All were convicted and fines totalling Shgs. 2,090/- were collected, and one native was imprisoned for eight days. 5 were for failing to wear clean clothing while occupied in selling meat. The accused, all Indians, were convicted and fines totalling Shgs. 30/- were imposed. 9 were for conveying meat through the streets without sufficient covering; seven of the accused, all Indians, were convicted and fines amounting to Shgs. 77/50 imposed. The other two cases were European, the Magistrate ruling that the defendants were not the owners, as the meat had been sold for cash, although the defendants' employees were conveying the meat at the time. 12 were demolition orders under the Public Health Ordinance, the defendants, all Indians, complying with the Magistrate's order in each case. 3 were for failing to comply with sanitary notices served under the Public Health Ordinance. A Magistrate's order was obtained and complied with in each case.

PUBLIC HEALTH MUSEUM.

In connection with the Nairobi Health Office there has been established by the Medical Officer of Health a Public Health Museum which was opened to the public towards the end of the year.

In this Museum there are displayed photographs illustrating subjects of public health and sanitary interest, charts relating to mortality, infectious diseases and African diets, models of sanitary fittings, samples of local building materials, catalogues and price lists of sanitary appliances, type-plans for African Housing, latrines, septic tanks, etc., etc.

(3) MOMBASA.

In the Annual Report for 1923, it was stated that:—"In Mombasa no notable developments have taken place during the year, nor will any marked improvement of sanitary conditions be possible until more land can be set free for the erection of further housing." That statement applies equally to the record for 1924. Progress in Mombasa is dependent on town-planning, as, till that is accomplished, neither demolition schemes, housing schemes nor main drainage are possible, and it is fundamental and radical alteration that is required if sanitary conditions are to be improved. The sanitary staff in Mombasa labours under the great disadvantage that, in most instances, it must refrain from asking for extensive improvements to premises, since to do so would merely make general improvement under an ordered scheme more costly and difficult at a later date. That a large amount of routine sanitary work has nevertheless been carried out the record given below is evidence.

The town-planning scheme has not yet been carried into effect, but it is a matter for satisfaction that considerable funds are now available and that the services of an engineer with town-planning experience are likely to be available during the ensuing year. It is hoped that this officer will devote attention not only to the Island of Mombasa including the Old Town, but also to the question of the development of the whole neighbourhood.

Conservancy and scavenging have been carried out as usual under the superintendence of the Medical Officer of Health.

ROUTINE WORK OF SANITARY INSPECTORS

APPROX. NUMBER OF INSPECTIONS BY SANITARY INSPECTORS.—

(a)	Nuisances and General	8,736
(b)	Licensed premises	5,549
(c)	Disinfections.	8
(d)	Water supply	200
(e)	Food.	907
(f)	Imported second-hand clothing	165
	Total.	15,565

SANITARY NOTICES.—

Number served during the year.	287
,, cancelled	7
,, complied with	247
,, outstanding	33
,, final served	1

RESULTS OF INSPECTIONS AND NOTICES.—

Premises cleansed and repaired	769
,, closed	10
,, demolished	20
,, in which drainage provided	47
,, in which drainage repaired	32
Cesspools constructed	38
,, repaired	45
,, closed	26
Pailclosets provided to premises	11
Yards cleansed	123
,, paved	18
Dustbins provided	309
Plots cleared of bush	where necessary.
Deposits of refuse removed	where necessary.
Cattle sheds, stables, bandas, etc., cleansed	72
Cattle sheds, stables, bandas, etc., repaired	39
Cattle sheds, stables, bandas, etc., demolished	1
Improvements effected and nuisances abated at licensed premises	538

MOSQUITO PREVENTION.—

Mosquito-breeding places dealt with	364
Number of holes in mango trees cut out	395
,, of holes in mango trees stopped	154
,, of wells supplied with fish.	18

COMPLAINTS.—

Number of complaints received	66
,, ,, ,, dealt with	66

LICENSED PREMISES.—

	Average number.	Applications received during year.	Applications recommended during the year.	Approximate number of inspections.
Aerated water and Ice Factories.	4	4	4	222
Bakeries.	9	11	9	398
Cattle sheds, stables, etc., etc.	8	2	2	283
Pig keepers.	3	3	3	95
Dairies, cowsheds and milkshops	21	22	22	1,468
Eating houses.	55	65	55	1,863
Laundryman premises	23	31	24	577
Liquor licensed premises.	23	15	14	353
Lodging houses.	5	10	5	226
Vegetable sellers.	2	4	3	33
Soap Factories	2	2	2	31
Total.				5,549

BUILDING APPLICATIONS.—

Number of applications submitted	644
,, ,, ,, approved	432
,, ,, ,, disapproved	173
,, ,, ,, returned for alteration	29
,, ,, ,, pending	10

BUILDING PLANS.—

Number of plans submitted	33
,, ,, ,, approved	16
,, ,, ,, disapproved	5
,, ,, ,, returned for alteration	12

PIPE WATER SUPPLY.—

Applications submitted	54
,, approved	41
,, disapproved	12
,, pending	1

DISINFECTION.—

Number of premises disinfected	1
,, ,, rooms disinfected	6
,, ,, articles disinfected	100
,, ,, destroyed articles	—

IMPORTED SECOND-HAND CLOTHING.—

Number of articles examined	25,720
,, ,, ,, passed	25,155
,, ,, ,, refused	296
,, ,, ,, passed after disinfection	269

RAT-TRAPPING AND POISONING, ETC.—

Number of houses examined	2,630
,, ,, rat traps set	211,495
,, ,, rats caught	10,911
,, ,, rats found dead	46
,, ,, rats found plague infected	—
,, ,, poison baits set	158,950

PROSECUTIONS.—

Class.	Number.	Withdrawn.	Lost.	Convictions.	Fines. Shs.
Mosquito.	1	—	—	1	10/-
Licenced premises	—	—	—	—	—
Nuisance Rules	5	—	—	—	—
P. H. O. 1921	4	1 pending	—	1	5/-
I. P. C.	1	—	—	1	400/-
Total.	11	1 pending	—	3	415/-

COURT ORDERS OBTAINED.—

Nuisance orders	5
Closing orders	1
Demolition orders	2
Ejection orders	1

FOOD CONTROL.—

Meat market inspected daily.

Class of food.	Quantity inspected.	Quantity condemned.
Beef.—	4,061 carcases.	6,966 lbs.
Ox livers.	—	304
,, lungs.	—	139
,, hearts	—	143
,, heads and tongues	—	26
,, gut	—	47 lbs.
,, stomach	—	3
,, spleen	—	3
Mutton.	15,051 carcases.	639 lbs.
Sheep livers	—	1,716
,, lungs	—	361
,, gut	—	7 lbs.
Pork.	31 carcases.	—
Pig lungs	—	2
,, livers	—	1
Other Foods.—		
Barley (Mortons)	109 1 lb. tins.	109 lbs.
Almonds (Mortons)	116 ½ ,, ,,	116 ,,
Pea flour	4 1 ,, ,,	4 ,,
Maconochie rations	30 1 ,, ,,	30 ,,
Mincemeat	26 1 ,, ,,	26 ,,
Fruit salad	2 2 ,, ,,	4 ,,
Peas	2 1 ,, ,,	2 ,,
Ox tongue	1 1 ,, ,,	1 ,,
Dates	16 packets.	16 packets.
Prunes	4 cases 25 p. c.	100 lbs.
Raisins	5 cases 25 p.c.	125 ,,
Unsweetened milk	96 tins.	96 tins.

Class of food.	Quantity inspected.	Quantity condemned.
Onions	240 lbs.	240 lbs.
Bacon	90 lbs.	90 ..
Japanese provisions	1 case.	1 case.
Mangoes	20 lbs.	20 lbs.
Nestles malted food	156 tins.	156 tins.
Nestles malted food	2,304 bottles.	2,304 bottles.
Tea	1,302 lbs.	1,302 lbs.
Vermicellies	31 cases.	26 cases.
Fish	1 lb.	1 lb.
Rice	25,388 lbs.	8,214 lbs.
Flour	33,118 ..	1,893 ..
Dhall	1,429 ..	181 ..
Wheat	378 ..	124 ..
Sago	304 ..	30 ..
Joua carri seeds	592 ..	58 ..
Grams	320 ..	4 ..
Betel nuts	518 ..	21 ..
Soda	171 ..	6 ..
Tumirn	390 ..	55 ..
Camir seed	116 ..	39 ..
Muthi seeds	180 ..	75 ..
Cabbages	230 ..	78 ..
Carrots	20 ..	4 ..
Beetroot	60 ..	44 ..
Oranges	40 ..	10 ..
Turnips	50 ..	35 ..
Cheese	118 ..	118 ..
Macaroni	7 4 lb. tins.	28 ..
Oatmeal	85 4	340 ..
Chocolates	1,084 lbs.	1,084 ..
Sweets	220 ..	220 ..
Sausages	529 ..	529 ..
Marmalade (Mortons)	504 1 lb. tins.	504 ..
Sardines	2 cases 100 p. c.	2 cases.
Cod Roes (Mortons)	48 1 lb. tins.	48 lbs.
Baked pork and beans (Mortons)	5 1	5 ..
Salmon	27 1 lb. tins.	27 ..
Marmalade (C. & B.)	31 2	62 ..
Tinned herrings	59 tins.	59 tins.
Pork and beans	48 2 lb. tins.	96 lbs.
Bottled sweets	108 bottles.	108 bottles.
Toffee	432 tins.	432 tins.
Condensed milk	4,116 ..	4,116 ..
Oxford Marmalade (Cooper)	1,440 ..	—
Plums (double)	96 ..	24 tins.
Beans	175 bags.	—
White salt herrings	1 case.	1 case.
Raspberries (Moirs)	5 cases.	1 case.
Blackberries (Moirs)	2 ..	1 ..
Marmalade (C. & B.)	2,414 lbs.	2,414 lbs.
Jam (S. African)	130 1 lb. tins.	130 ..
Plum puddings (Chivers)	13 1	13 ..
Baked beans	44 1	44 ..
Jelly (C. & B.)	6 ½	3 ..
Fresh Herring (Maconochis)	115 1	115 ..
Lyles golden syrup	51 2	102 ..
Celery salt	15 bottles.	15 bottles.
Rice flour (Morton)	22 1 lb. tins.	22 lbs.
Dried fruits	3 boxes, 25 lbs. each.	75 ..
Allenbury Malted food	73 tins.	73 tins.
A. 1 Sauce	18 bottles.	18 bottles.
Patent self raising flour	7 7 lb. tins.	49 lbs.
Cadbury's Cocoa	42 ½	21 tins.
Cayane pepper	18 4 oz. bottles.	4½ lbs.
Anchovies in bottles	12 ½ lb. bottles.	3 lbs.
Mustard (Mortons)	72 ½ lb. tins.	36 ..
Sardines Afudai	144 tins.	144 tins.
Baked beans (R. Hood Brand)	12 ..	12 ..
White bait	40 ½ lb. tins.	20 lbs.
Holland cheese	5 tins.	5 tins.
Allenbury's food	70 ..	70 ..
Allenbury's food	14 bottles.	14 bottles.

Class of food.	Quantity inspected.	Quantity condemned.
Assorted Jams (Mortons)	48 tins.	48 tins.
Dessicated Cocoanut	9 ,,	9 ..
Patent Barley	43 ..	43 ..
Patent Groats	72 ..	72 ..
Linseed	60 ..	60 ..
Potted meat (C. & B.)	144 ..	144 ..
B. B. Powder	6 cases.	3 cases.
B. B. Powder	20 tins.	20 tins.
Pascall's sweets	960 ,,	960 ..
Apples	10 lbs.	10 lbs.
Kippers	58 cases (702 lbs.)	58 cases.
Haddocks	65 cases (1,190 lbs.)	65 ..
Onions	400 bags.	354 bags.
Garlick	75 ..	—
Mellins food	15 lbs.	—
Corn flour	4 cases (288 tins).	4 cases.
Mixed provisions	6 ..	6 ..
Royal Baking Powder	1 ..	1 ..
Curry powder	1 ..	1 ..
Biscuits	1 ..	—
Greengages	2 ..	2 ..
Red herrings	1 ..	1 ..
Strawberries in syrup	2 ..	2 ..
Red currants	2 ..	2 ..
White bait (Mortons)	4 ..	4 ..
Vienna Sausages	10 ..	8 ..
Oxtail soup	1 ..	1 ..
Lunch tongues	5 ..	4 ..
Army rations (Mortons)	8 cases.	7 cases.
Soup squares (M. & Lazenby)	5 ,,	5 ..
Black currants	1 ..	1 ..
Almonds	2 ..	2 ..
Haddocks (London)	1 ..	1 ..
Glaxo	4 ..	4 ..
Red plums	1 ..	1 ..
Preserved bloaters	2 ..	2 ..
Pate-de-Fois gras	50 tins.	50 tins.
French capers	1 case.	1 case.
Red currant jam	1 ..	—
Bordeau plums	2 cases.	—
Beef suet	11 ,,	—
Malted milk	1 ..	—
Ground rice	1 ..	—
Gherkins	1 ,,	—
Tart fruits	1 ,,	—
Tinned pears	1 ,,	—
Ox tongue (M. & M.)	7 ,,	4 cases.
Chocolates (J. Lyons)	2 ,,	1 ,,
Mint Lozengers (J. Lyons)	1 ..	1 ,,
Chrystalised Ginger'	1 ,,	1 ,,
Biscuits (Federal)	157 1 lb. tins.	105 lbs.
Confectionery (Mortons)	1 case.	1 case.
Dried fish	4 cases.	4 cases.
Flour	3 ..	3 ..
Black pepper	9 ,,	9 ..
Apricots	2 ..	2 ,,
Beer (Chandlers)	5 ,,	5 ,,
Ghee	2 gallons.	2 gallons.
Lamb and peas (Moirs)	1 case.	1 case.
Yorkshire relish (C. & B.)	11 ..	1 ..
Black currants (C. & B.)	1 ,,	1 ..
Pate di fois Gras (Sharewood)	1 ..	1 ,,
Asparagus (Libbys)	1 ..	1 ..
Lunch tongues (Moirs)	14 ,,	14 ..
Herrings (Mortons)	22 ..	22 ,,
Haddocks (Mortons)	11 ,,	11 ..
Bloaters (Mortons)	21 ..	21 ..
Ground rice	20 lbs.	20 lbs.
Pickles (Mortons)	14 cases.	10 cases.
Cherries (Mortons)	1 ,,	1 ,,
Sausages (Palethorps)	8 ..	8 ..
Tinned beef (Moirs)	1 ,,	1 ..

Class of food.	Quantity inspected.	Quantity condemned.
Herrings in Tomato Sauce (Mortons)	1 case.	1 case.
Anchovies	2 ,,	2 ,,
Pickled Walnuts (Mortons)	2 ,,	2 ..
Strawberries (Mortons)	2 ..	2 ,,
Raspberries (Mortons)	2 ..	2 ..
Soup Blocks (Lazenby)	8 ..	8 ..
Black currants (Mortons)	2 ..	2 ,,
Pan Yan Sauce (Maconochie)	18 ..	18 ..
Cod Roes (Mortons)	2 ..	2 ..
Pickled Onions (Heinz)	8 ,,	8 ..
Mixed Pickles (Heinz)	16 ..	16 ..
Sauce (Heinz)	3 ,,	3 ,,
Pickles (Lazenby's)	2 ..	2 ..
O. K. Sauce (Masons)	6 ..	6 ..
Blackberries (Mortons)	2 ..	2 ..
Irish Stew (Moirs)	2 ..	2 ..
Soup Tablets (Symington)	10 ..	10 ,,
Plums (Mortons)	6 ,,	6 ..
Tapioca (Mortons)	3 ,,	2 ,,
Gherkins (Mortons)	1 ,,	1 ..
Custard powder (Birds)	1 ..	1 ..
Tinned Mutton (Moirs)	2 ..	2 ..
Hare soup	1 ..	1 ..
Mixed Jams (Chivers)	2 ,,	2 ,,
Gherkins (Heinz)	1 ..	1 ..
Walnuts (Heinz)	2 ..	2 ..
Greengages (Mortons)	7 ..	7 ..
Herrings (Moirs)	1 ..	1 ,,
A. 1 Sauce (Brand)	7 ..	7 ..
Ground Almonds (J. Travers)	4 ,,	4 ..
Salad Cream (Heinz)	1 ,,	1 ..
Tart Fruits (Mortons)	2 ..	2 ,,
Arrow-root (Mortons)	1 ,,	1 ,,
Sausages (Moirs)	19 ..	19 ..
Rump Steak (Moirs)	1 ..	1 ,,
Cherries (Moirs)	4 ..	4 ..
Red Currants (Mortons)	1 ..	1 ..
Cranberries (Moirs)	1 ..	1 ..
Beef and Vegetables (Moirs)	1 ,,	1 ,,
Tongue (Armour & Coy.)	1 ..	1 ..
Oatmeal (Grants)	4 ..	4 ..
Jam (Moirs & Morton)	7 ..	6 ..
Almonds (Mortons)	2 ,,	2 ..
Walnuts (Moirs)	1 ..	1 ..
Black currants (C. & B.)	1 ,,	1 ..
Gooseberries (Moirs)	1 ,,	1 ..
Gherkins (Moirs)	1 ,,	1 ..
Greengage Plums (Santa Clara)	1 ,,	1 ..
Lobster (C. B.)	1 ,,	1 ..
Pan Yan Pickles (Maconochie)	1 ,,	1 ..
Confectionery (Pascalls)	1 ,,	1 ..
Barley (Mortons)	24 ..	—
Peas (Mortons)	5 ,,	—
Pepper (Mortons)	2 ,,	—
Baked Beans (Mortons)	1 ..	—
Marrow Fat (Mortons)	2 ,,	—
Fruit Salad (Chivers)	3 ,,	2 cases.
Cayenne pepper (Mortons)	1 ,,	—
Preserved ginger	6 ..	3 cases.
Paisley flour (B. & P. & Mortons)	4 ..	1 ..
Red currant jelly	1 ..	—
Olive Oil (Peter Keivill)	1 ..	—
Onions (Mortons)	1 ..	—
Apples	2 barrels.	2 barrels.
Tinned salmon	8 tins.	8 tins.
Sauce (Goodall & Co.)	8 cases.	8 cases.
Peas	6 ..	6 ..
Pickle (Taylor & Co.)	8 ..	8 ..
Horlicks Milk	1 ..	1 ..
Beans (Heinz)	1 ..	1 ,,
Bottled fruits (Mortons)	3 ..	3 ,,

Number of oxen affected with *Cysticercus bovis* — 156.

MATERNITY AND CHILD WELFARE.

One trained European Nursing Sister is maintained on the staff of the Health Office in Nairobi, and one at Mombasa.

The following figures for Mombasa give some index of the work done during the year:—

New cases dealt with	1,503
Attendances at Clinic	10,157
Visits made to cases at homes.	2,407
Vaccinations performed	127

The growth in popularity of the Health Visitors' clinic or dispensary in Mombasa is indicated by the fact that the record of attendances is almost double that of the previous year.

In Nairobi, 1,218 new cases were dealt with by the Health Visitor at the dispensary in the native location.

PORT SANITATION.

(A) MOVEMENT OF SHIPPING.

The following vessels entered Mombasa and Kilindini harbours during the year:-

Steamships	383
Dhows	223
Total. ..	606

(B) INFECTIOUS DISEASE IN VESSELS.

The undermentioned vessels were specially dealt with on arrival at this port owing to the presence of infectious disease on board:—

(1) On March 1st, the S.S. "Karoa", British India Steam Navigation Company, arrived at Mombasa from Bombay via Zanzibar. Three cases of small-pox had developed since the ship left Bombay. She had called at Zanzibar prior to arrival at Mombasa and had landed there her 2nd class and deck passengers. On arrival at Mombasa 1st class passengers were landed under surveillance, and the ship was given pratique.

(2) On April 13th, the S.S. "Khandalla", British India Steam Navigation Company, bound from Bombay to Durban, arrived at Mombasa. During the voyage a case of small-pox had occurred among the deck passengers; the ship had therefore proceeded to the quarantine station at Zanzibar, where all deck passengers for East African Ports had been landed in quarantine. On arrival at Mombasa first and second class passengers were landed under surveillance and allowed to proceed to their destinations.

(3) On 19th May, the S.S. "Karagola", British India Steam Navigation Company, bound from Bombay to Durban, arrived with one case of small-pox amongst the deck passengers. The case was removed to the Infectious Diseases Hospital at Mombasa. All passengers were vaccinated. First and second class passengers were landed under surveillance and allowed to proceed to their destinations. The cargo was unloaded, and the ship proceeded to Zanzibar where deck passengers were landed in quarantine.

(4) On the 23rd May, the S.S. "Karapara", British India Steam Navigation Company, bound from Bombay to Durban, arrived at Mombasa with one case of small-pox on board. The action taken with regard to this ship and passengers was similar to that taken with the S.S. "Karagola". On the 24th of May a further case of small-pox amongst deck passengers was reported by the ship's surgeon, and this case was also removed on shore to the Infectious Diseases Hospital.

SCHOOL INSPECTION, NAIROBI.

The school accommodation provided in Nairobi is somewhat varied.

The Government European school cannot be described as satisfactory. Most of the buildings, which are constructed of wood and iron, are provided with poor lighting and ventilation, and the general arrangement of the rooms leaves much to be desired.

Missionary and private European schools, of which there are several in the town, are fairly satisfactory.

The Government Indian school is constructed of wood and iron, insufficient lavatory accommodation is provided and some overcrowding occurs. A modern block has been built which is well planned, well lit and ventilated.

The Khoja, Sikh, Arya Samaj and Ancient Vedic Church schools are built of stone, and apart from minor details are satisfactory on the whole, but increased sanitary accommodation is desirable.

The Roman Catholic school is a stone building with good lighting and ventilation.

The Church Missionary Society school consists of two good stone buildings which are satisfactory.

MEDICAL INSPECTION OF SCHOOL CHILDREN.

At the beginning of the year there were approximately 279 European, 758 Indian, 15 Eurasian and 122 African children attending Nairobi schools. These numbers increased during the year. A medical inspection of the children was carried out with the following results:—

Race.	Number of children examined.	Pediculosis.	Dental defects.	Palpable spleens.	Enlarged tonsils.	External eye defects.	External ear defects.
European.	279	Nil	56	3	54	2	2
Eurasian.	15	1	5	1	4	Nil	Nil
Indian.	758	148	216	31	141	39	43
African.	122	Nil	4	21	13	3	2

Expressing these figures in percentages the following results are obtained:—

Race.	Number of children examined.	Pediculosis.	Dental defects.	Palpable spleens.	Enlarged tonsils.	External eye defects.	External ear defects.
European.	279	Nil	20	9	24	2	2
Eurasian.	15	6	30	6	24	Nil	Nil
Indian.	758	26	29	4	18	5	5
African.	122	Nil	5	17	11	25	2

Pediculosis.—The presence of lice can be taken as a standard of cleanliness. No cases were recorded amongst the Europeans or Africans, but they were present on about 26% of the Indian children. In English towns lice are found on about 10% of the school children examined.

Dental Defects.—The percentage of pupils with dental caries was high and points to considerable neglect of the teeth, more particularly amongst the younger children. It should be noted, however, that the percentage amongst school children in England is much higher.

Spleens.—Spleen palpation was carried out in order that some idea of the incidence of malaria might be obtained.

Enlarged Tonsils.—A high percentage of enlarged tonsils was noted in the Europeans and Indians. The average age of the children examined in these two races was, however, lower than that of the Africans, and as the spontaneous cure of enlarged tonsils tends to occur about the age of twelve, comparison is difficult.

Eye Defects.—The figures recorded chiefly refer to evidence of old conjunctivitis and minor external eye troubles. Vision was not tested.

Ear Defects.—The cases all consisted of "wax in ears" or "discharge from ear". No case of deafness, mastoiditis or other serious ear trouble was noted.

Nutrition and Development.—As judged by weight and height standards, nutrition and development were satisfactory.

In general it may be stated that the European children are healthy and clean, the Indian children on the whole are healthy, but require more education in personal cleanliness and oral hygiene, and the African children who are older appear to be healthy.

VII.-HOSPITALS, DISPENSARIES & INSTITUTIONS.

1. GENERAL REMARKS.

Analysis of the figures of admissions to the hospitals throughout the Country reveals the following:—

	IN-PATIENTS.			DEATHS.		
	1924.	1923.	1922.	1924.	1923.	1922.
European Officials.	594	596	635	4	4	5
Non-European Officials.	2,554	2,603	3,337	5	2	6
Gen. European Population.	723	629	1,106	23	13	21
Gen. Native Population.	25,990	33,229	37,384	786	830	870

The drop in the number of native in-patients as shown is due to the fact that a different system with regard to returns has been adopted in certain particulars. In 1923 patients accommodated in yaws camps were classed as in-patients: in view of the fact that they received little more than a lodging while undergoing treatment it seemed more proper that they should be included under heading "out-patients".

The increase in the number of general practitioners the use of nursing homes and non-Government Hospitals throughout the country every year render the returns of disease less comprehensive than they were formerly when the only medical men in the Country with few exceptions were those employed in Government service.

The question of the provision of hospital facilities for employed labour is becoming rapidly more pressing. Government will require to decide whether the provision of Government native hospitals shall be extended throughout the settled area or whether a system of estate or group hospitals maintained and erected from a cess on employers of labour as obtains in other Countries shall be the future policy. Employers throughout the Country are every day realizing more and more the necessity and economic value of some form of hospital or dispensary treatment for their employees.

2. EUROPEAN HOSPITALS.

Enamel baths were installed at Mombasa. Money was also provided at the end of the year by a special vote in Legislative Council for the erection of an operating theatre. The work will be carried through in 1925.

The comparative table of admissions to the three European Hospitals is shown below.

	1924.	1923.	1922.
Total number treated.	602	490	748
Total number discharged	567	464	709
Total number of deaths	21	12	22
Total number remaining	14	14	17

Of the above figures 137 admissions of officials as against 133 and 340 in the preceding year. Four officials died and 17 non-officials as against 2 and 10 in 1923.

The distribution of the various cases was as follows:—

	Officials.	Non-Officials.
Mombasa.	45	159
Nairobi.	81	237
Kisumu.	11	56

The figures approximate very closely to those for 1923 with the exception of a considerable rise in the number of non-official patients at Nairobi accounting by itself for the increased total of admissions for the whole Country.

A very large increase occurred in the total of operations performed. The distribution was as follows:—

Mombasa.	25
Nairobi.	181
Kisumu.	—

One death occurred after operation, a case of fractured skull for which decompression had been performed.

Malaria, as usual the chief cause of admission to hospital provided 24.9% of the total. The cases numbered 147 as against 145 in 1923.

3. NATIVE HOSPITALS AND DISPENSARIES.

The only extensions which have been made in 1924, to existing native hostipals have been the erection at Kisii of a large ward constructed of sun-dried brick with a grass roof and at Fort-Hall of two mud and wattle buildings for 18 and 25 beds respectively. The additions at Fort-Hall were built by the Railway for the accommodation of patients from the railway construction in the vicinity.

During the year the dispensary and native hospital at Voi, closed as a result of the retrenchment in 1922, were reopened. The step was rendered urgently necessary from the fact that the decision to abolish the Voi-Kahe Railway had been reversed and the considerable number of railway employees concerned in its running would have been largely cut off from medical assistance. The benefit to the district is considerable and relief has been afforded to Mombasa whither increasing numbers of natives from the Teita Reserve were resorting in order to obtain treatment. On one occasion 43 cases of yaws proceeded by train from Taveta to Mombasa.

The accommodation at the native hospitals has been strained to its uttermost during the year: at Mombasa especially the increasing demands for admission have caused considerable difficulty. On more than one occasion the patients in hospital have been 50% in excess of the authorized capacity. At Nairobi accommodation for extra patients has been provided in tents.

The position of the limited staff charged with the conduct of the large native hospitals is becoming more and more difficult in view of the increased work which is presenting itself: if a high standard of work is to be maintained help will have to be provided.

The necessity for, and the present difficulties in the way of, providing more adequate training for the dressers in native hospitals and also the urgency of a general revision of their terms of service have been commented on in the section "Administration."

It has not been possible to effect improvement in the unsatisfactory position which obtains at Kakamega from the continued use of temporary buildings of wattle and daub with earth floors.

The conditions of the non-European section of the Infectious Diseases Hospital at Nairobi demand attention. The buildings are very old and some past repair with the floors in holes and the roofs leaking. The average number of patients accommodated is steadily increasing and from the design and layout of the buildings it is not possible to ensure complete isolation or to avoid the possibility of cross infection.

The record of cases treated and deaths at the various Native Hospitals is as follows:—

	1924.			1923.			1922.	
	In.	Out.		In.	Out.		In.	Out.
Admissions.	25,990	150,172	..	33,229	245,554	..	37,384	165,538
Deaths.	786			830			821	
Death rate per 1,000 of admissions.	30.2			24.97			21.96	

In 1923, the total of out-patients included cases treated at sub-dispensaries or by medical officers on tour; these have been returned separately in 1924, and totalled 185,718. The apparent drop in the total of in-patients have been commented on in the general remarks on Hospitals.

4. NATIVE RESERVES.

No new centres of work in Native Reserves have been opened during the year though, as already pointed out, the reopening of the Voi Hospital affords considerable benefit to the Wa Teita. The existing centres have generally maintained their usefulness; any considerable expansion of their scope is out of the question without an increase of staff. The position at Chuka as outlined in last year's report remains unsatisfactory and a further drop in the number of cases has been recorded. It is now certain that Chuka should be abandoned as a headquarter centre.

The system of sub-dispensaries in connection with the larger medical centres has again been extended during the year and a larger number of dressers in the Central

Kavirondo and Fort-Hall districts have been trained to give injections of bismuth for the treatment of yaws and syphilis. The numbers of dispensaries in existence at the end of the year are as follows:—

Fort-Hall.	8
South Kavirondo.	7
Central Kavirondo.	9
North Kavirondo.	19
Chuka.	6
Machakos.	13

The necessary supervision of the out-dispensaries occupies a large proportion of the time of the medical officers. Without supervision at frequent intervals it is a regrettable fact that the work carried out rapidly falls off both in quantity and quality. The dressers cannot yet be relied on to any extent and constant watch is necessary to see that their duties are performed satisfactorily. The returns submitted from the sub-dispensaries compiled as they are by comparatively untrained natives have to be accepted with caution.

The type of building which is to be aimed at in the future for sub-dispensaries has given rise to considerable discussion. Hitherto the provision of accommodation has been the duty of the local chiefs and the buildings have varied very widely in design and suitability. The question of repair has given rise in several instances to considerable difficulties. It is desirable that the dispensary buildings and the dressers' huts should be an object lesson as to how improvement in the type of housing can be effected in the Reserves.

The figures for three essentially Native Reserves Stations are as follows:—

	In-patients.	Out-patients.	Out-dispensaries and treated by Medical officer on tour.
Chuka.	836	1,894	16,452
Kisii.	2,772	10,858	19,638
Kakamega.	984	1,746	36,190

5. MATHARI MENTAL HOSPITAL.

The name of the institution for the accommodation of mental patients was changed to the Mathari Mental Hospital.

The following table shows the number of admissions and deaths during the last three years.

	ADMISSIONS.				DEATHS.		
	1924.	1923.	1922.		1924.	1923.	1922.
Males.	70	69	67	—	15	9	35
Females.	14	11	19	—	7	5	4.
Totals.	84	80	86		22	14	39

During the year the total number of patients under treatment was 180.

The varieties of insanity for which patients were admitted were:—

Mania.	32
Dementia.	12
Delusional Insanity.	8
Imbecility.	1
Melancholia	0
Other Mental Diseases Including Epilepsy	1
Alcoholism, etc.	33

Deaths.—There were 22 deaths including 2 Europeans. The percentage of deaths to total number treated was 12.35. The percentage to admissions was 26.19.

Discharges.—60 patients were discharged during the year. Males 56 and Females 4.

Remaining.—There were 98 patients remaining on December 31st.

1924.	1923.	1922.
98	96	88

EUROPEAN SECTION.

Twenty-two cases were treated during the year.

Admissions.—15 males: 0 Females.

These were from the following places:—

Nairobi.	6
Nakuru.	6
Kisumu.	2
Mombasa.	1

A large percentage of admissions was caused by alcohol.

One case of Locomotor Ataxia was admitted from Nairobi. Another case suffered from Cerebral-Arterio-Sclerosis from which he died two months after admission.

A case of Hemiplegia caused by Apoplexy, also died during the year.

A troublesome case of Manic-depressive Insanity was brought from Mombasa. He belonged to the Crew of one of the Dutch boats.

Discharges.—13 were discharged of whom three left the country.

Deaths.—2 males died.

Remaining.—7 remained at the end of the year. 4 males and 3 females.

Recreation and Amusements.—There are too few European patients for such games as Football or Cricket. Tennis is played if the mental condition of patients permits. A small library, and indoor games such as cards, dominoes, draughts, etc., provide further amusement.

NATIVE SECTION.

There were 156 cases treated during the year.

Admissions.—55 males and 14 females.

Discharges.—47—males 43 and females 4.

Deaths.—Numbered 20, males 13 and females 7.

Sickness.—There are usually about fifteen on the sick list, of whom some are infirm dements and others are epileptics.

A necessary improvement which would be a great benefit would be the provision of an airy ward of about twelve beds where sick and infirm male patients could be treated as purely hospital patients and entirely segregated from the other patients. A temporary "Banda" has been constructed.

Criminals.—11 Criminal lunatics remained at the end of the Year.

ASIATIC SECTION.

There were 4 admissions, all Indians.

Discharges.–2 males, both Indians, one of whom was readmitted later in the year.

Deaths.—There were no deaths.

6. GAOLS.

The sick rate and death rate for the prisons of the Colony and Protectorate for 1924, conform very closely with those for 1923, the total number of deaths being identical: the figures are as under:—

	Daily average in prison.	Admissions to Hospital.	Daily average on sick list.	Percentage of total inmates.	Deaths.
1923.	2,086	1,813	78.5	3.7	50
1924.	2,282	1,758	82.7	3.6	50

For the three principal prisons the figures are:—

	NAIROBI.				MOMBASA.				KISUMU.			
..	1921.	1922.	1923.	1924 ..	1921.	1922.	1923.	1924 ..	1921.	1922.	1923.	1924
Average daily number in gaol.	760	738	794	865 ..	274	333	286	339 ..	93	145	201	232
Average daily number on sick list. ..	47.87	41.1	38.3	29.8 ..	8.02	8.3	3.0	11.2 ..	1.23	2.43	3.5	3.0
Percentage of average daily sick to average number in gaol.	6.3	5.6	4.8	3.4 ..	2.9	2.5	1.0	3.3 ..	1.3	1.7	1.5	1.3
Total Deaths.	43	23	35	35 ..	1	4	1	3 ..	—	6	1	3
Percentage of deaths to average daily number in gaol.	5.6	3.1	4.4	4.0 ..	.36	1.2	.3	.09 ..	—	4.1	.5	1.3

The deaths shown in the above tables exclude executions.

The record of Nairobi Prison as regards admissions to hospital during 1924, is slightly better than in 1923, but the number of deaths is the same, viz. 35.

The following table shows the difference between the two years:—

Nairobi Prison.			1924.	1923.
Daily average in Prison.	..	..	865	794
Admissions to Hospital.	..	..	784	991
Daily average sick	..	..	29.8	38.3
Per cent. of inmates.	..	..	3.4	4.8
Deaths.	..	..	35	35

The higher sick rate in Mombasa Prison is partly explained by an epidemic of chicken-pox. The sick rate for Kisumu Prison still remained comparatively very low.

The fifty deaths (excluding executions) which occurred in the various prisons throughout the year were classified as under:—

		Nairobi Prison.	All other Prisons.	Total.
Pneumonia.	..	17	6	23
Dysentery.	..	15	1	16
Other Diseases.	..	3	8	11
Total.	..	35	15	50

Pneumonia, as in previous years, was the chief cause of mortality.

There was an outbreak of dysentery, of a very fatal form, in the Nairobi Prison during the last three months of the year. 19 cases were admitted to the Hospital, and of these 14 were fatal. Bacteriological examination showed that the infection was bacillary.

It must be recorded that the state of health of the prisoners in Nairobi Prison is still the cause of anxiety, and the death rate is far too high. The continued state of overcrowding, and the inadequate nature of the extra accommodation afforded by the use of tents, has been the subject of repeated comment by the Medical Department. No appreciable diminution in the sickness and mortality of the prison population can be expected until proper provision is made for housing.

The provisional ration scales, introduced in 1923, were continued throughout 1924. It is to be regretted that the information with regard to the comparative value of the two diets, which it was hoped might be obtained, has not been forthcoming. The difficulties in the way of determining, under prison conditions, the effect of diet on health, referred to in the Report for last year, have proved too great for any trustworthy conclusion to be formed.

With the present staff of the Medical Department it has not been possible to detail an Officer for this particular investigation, and the time and attention which so far has been devoted to the subject have only served to indicate the intricacy of the problem and the number of fallacies possible in any attempted solution.

Special mention must be made of an outbreak of disease among a group of Masai prisoners confined in the Nairobi prison. The condition which manifested itself was apparently similar to what has been termed "Rand Scurvey" and it appeared in a small group of prisoners confined in separate quarters and under separate conditions. Out of a batch of thirteen, nine were known to have developed the disease. The diet which had been received was the ordinary prison long term diet as set forth in the 1923 report and it had been cooked in the Common Kitchen and in common boilers.

The etiology of the outbreak presented considerable interest. The symptoms suggested a food deficiency, but against this is the fact that other prisoners, among whom were a considerable number of Masai, did not exhibit similar manifestations. The fact that the patients were Masai accustomed to a diet containing a preponderance of protein may be important. Further the conditions under which they were confined included the possibility of a lack of sunshine and exercise. It may well be that all the Masai were on the brink of a disease due to a comparative lack of proteins and that in the affected group a deficiency of sunlight and possibly exercise may have provided the additional factors. The possibility of infection must not be lost sight of. It is noteworthy that an outbreak of a similar nature occurred in 1906 in the Nairobi Gaol among a group of Nandi whose food habits approximate to those of the Masai.

RETURNS. -1924

TABLE I.

ADMINISTRATIVE DIVISION.

	Dr. J. L. Gilks	Principal Medical Officer.
	Dr. C. J. Wilson, M.C.	Deputy Principal Medical Officer.
	Dr. A. R. Paterson	Chief Sanitation Officer.
	Mr. H. Ogden	Office Superintendent.
	Mr. G. E. Scattergood.	Accountant.
	Mr. T. R. Wilson, D.C.M.	Clerk.
	Mr. F. L. Byrne	Clerk.
	Capt. J. S. Robertson, M.B.E.	Medical Storekeeper.
(1)	Mr. F. Strawbridge	Chief Sanitary Inspector.
	Miss J. S. Wishart	Stenographer.
	Miss M. E. Cameron	Stenographer.

MEDICAL DIVISION.

	Dr. H. H. V. Welch	Resident Surgical Officer.
(2)	Dr. J. Pugh	Senior Medical Officer.
	Dr. N. P. Jewell, M.C.	,, ,, ,,
	Dr. A. D. J. B. Williams, O.B.E.	,, ,, ,,
	Dr. T. H. Massey, M.C.	,, ,, ,,
	Dr. V. M. Fisher.	Medical Officer.
	Dr. A. S. Mackie	,, ,,
	Dr. R. C. Briscoe	,, ,,
	Dr. B. W. Dakers	,, ,,
	Dr. C. V. Braimbridge	,, ,,
(3)	Dr. G. W. Pope	,, ,,
	Dr. K. T. K. Wallington	,, ,,
(4)	Dr. E. A. Davison	,, ,,
	Dr. J. O. Beven	,, ,,
	Dr. R. A. W. Procter, M.C.,	,, ,,
	Dr. R. J. Harley-Mason	,, ,,
	Dr. J. C. J. Callanan	,, ,,
	Dr. C. H. Brennan, M.C.	,, ,,
	Dr. J. A. Ross	,, ,,
	Dr. P. Milne	,, ,,
	Dr. J. McPhail Campbell	,, ,,
	Dr. G. M. Ross	,, ,,
	Dr. F. R. L. Miller	,, ,,
	Dr. E. W. C. Jobson	,, ,,
(5)	Dr. A. R. Esler	,, ,,
	Dr. J. Forbes	District Surgeon.
	Dr. C. J. Caddick	,, ,,
	Dr. F. L. Henderson	,, ,,
	Mr. F. W. Day	Dispenser.
	Mr. A. H. Ball	,,
	Miss E. B. Wishart	Matron.
	Miss I. Wilson	Nursing Sister.
	Mrs. S. J. Harrison	,, ,,
	Miss A. E. Davis	,, ,,
	Miss M. I. Rhind	,, ,,
(6)	Miss A. B. Wharin	,, ,,
(7)	Miss H. M. Friedricks	,, ,,
	Miss P. S. Joubert	,, ,,
(8)	Miss V. B. Painter	,, ,,
	Miss H. Masters	,, ,,
	Miss D. M. Kenny	,, ,,
	Miss F. M. Biggar	,, ,,
	Miss H. Baumann	,, ,,
	Miss C. Tilney	,, ,,
	Miss M. Wallace	,, ,,
	Miss M. A. Currall	,, ,,
	Miss A. K. Wilson	,, ,,
	Miss R. A. Nimmo	,, ,,
	Miss A. Cockman	,, ,,

	Miss E. A. M. Riordan	,, ,,
	Miss J. M. Pearson	,, ,,
	Miss R. E. V. Nicholas	,, ,,
	Mr. W. Henfrey	Supdt., Mental Hospital.
	Mrs. L. A. Henfrey	Matron, Mental Hospital.
	Mrs. M. A. Bosch	Asst. Matron, Mental Hospital.
	Mr. S. J. Bosch	Warder, Mental Hospital.
	Mr. F. J. B. Jordan	,, ,, ,,

SANITARY DIVISION.

	Dr. H. S. de Boer, M.C.,	Medical Officer of Health.
	Dr. F. C. J. Johnstone	,, ,, ,,
	Dr. R. N. Hunter	,, ,, ,,
	Mr. J. P. Cook	Senior Sanitary Inspector.
(9)	Mr. A. P. Ling	,, ,, ,,
(10)	Mr. A. F. Dennett	Sanitary Inspector, 1st Grade.
	Mr. E. E. Williams	,, ,, ,, ,,
	Mr. D. P. Broad	,, ,, ,, ,,
(11)	Mr. R. C. Mills	,, ,, ,, ,,
(12)	Mr. A. Bunker	,, ,, ,, ,,
	Mr. H. E. Taylor	Sanitary Inspector, 2nd Grade.
	Mr. F. Hewitt	,, ,, ,, ,,
	Mr. H. O. Salt	,, ,, ,, ,,
	Mr. S. M. Jackson	,, ,, ,, ,,
	Mr. A. C. Arnold	,, ,, ,, ,,
	Mr. G. W. Barnes	Sanitary Overseer.
(13)	Miss M. A. Perkin	Nursing Sister.
	Miss R. K. Sharp	,, ,,
	Miss R. Anderson	,, ,,
	Mr. W. J. Henfrey	Suptd., Infectious Diseases Hospital.

LABORATORY DIVISION.

	Dr. W. H. Kauntze, M.B.E.,	Bacteriologist.
	Dr. P. A. Clearkin	1st Assistant Bacteriologist.
	Dr. G. V. Allen	2nd Assistant Bacteriologist.
(14)	Mr. W. C. Birch	Government Analyst.
(15)	Mr. R. W. R. Miller	Chemical Officer.
	Mr. F. A. Bailey	Laboratory Assistant.
	Mr. R. Brunsden	Laboratory Asst., (Learner Grade).

REMARKS.

(1) Promoted, 1st January, 1924.
(2) Transferred to Tanganyika Territory as Deputy Principal Medical Officer, 15th November, 1924.
(3) Transferred to Hong Kong, 31st July, 1924.
(4) Services terminated, 12th March, 1924.
(5) Transferred from Hong Kong, 10th July, 1924.
(6) Resigned, 17th June, 1924.
(7) Resigned, 18th July, 1924.
(8) Services terminated, 17th July, 1924.
(9) Promoted, 1st January, 1924.
(10) Transferred to Federated Malay States, 9th September, 1924.
(11) Promoted, 1st January, 1924.
(12) Promoted, 1st January, 1924.
(13) Resigned, 22nd June, 1924.
(14) Transferred to Medical Department, 1st January, 1924.
(15) Transferred to Medical Department, 1st January 1924.

TABLE II.

FINANCIAL.

The sanctioned Medical Budget for the year 1924, was a total of £126,943, as compared with £130,177 for the preceding 12 months.

Of the 1924 grand total, £118,688 was expended, leaving an unexpended sum of £8,255.

The headings under which the vote was arranged were as follows:—

MEDICAL DEPARTMENTS.

Administrative Division.

	Estimates. £	Actual Expenditure. £
Personal Emoluments.	12,215	11,315

(Under this heading are included the salaries of the Principal Medical Officer, Deputy Principal Medical Officer, Chief Sanitation Inspector, Office Superintendent, Medical Storekeeper, Accountant, Clerical Establishment, Messengers and packers).

Medical Division.

Personal Emoluments.	48,769	42,949

(Under this heading are included the salaries of the Senior Medical Officer, Medical Officers, Surgical Officer, Medical Officers, Nurses, Superintendent, Warders, Matron, Assistant Matron, Mental Hospital, Assistant Surgeons, Sub-Assistant Surgeons, Compounders, Native Hospital Attendants and Mental Hospital Attendants).

Sanitation Division.

Personal Emoluments.	12,707	10,922

(Under this heading are included the salaries and duty allowances of the Medical Officers of Health, Sanitary inspectors, Nurses, Vaccinators, Native Attendants for Infectious Diseases Hospitals, Leper Lazaretto and Quarantine Stations, Clerical Establishment, Mechanics for Clayton disinfectors, office boys and messengers).

Laboratory Division.

Personal Emoluments.	6,754	6,216

(Under this heading are included the salaries of the Senior and Assistant Bacteriologists, Government Analyst, Chemical Officer, European and Asiatic Laboratory Assistants and Native Attendants).

Medical Departments.

Other Charges.	46,148	47,098

(Under this heading are included Medical and Surgical Stores, Contingencies, Transport, Up-keep of Hospitals, Uniforms, Furniture and Equipment, Electric Lighting, Water Supplies, Epidemics, Bush clearing, Ambulance and Motor services, etc., Medical Mission units and Medical Work in Native Reserves).

Special Expenditure. (Contribution to Nakuru War Memorial Hospital).	350	188

REVENUE.

The total amount of revenue collected as hospital fees, sales of medicines and surgical stores, bills of health and registration fees, was as follows:—

	£	£
Hospital fees, sales of medicines and registration fees.	5,546	
Bills of Health	431	
Laboratory Fees	611	6,588
Re-imbursement from Uganda Government on account of Zanzibar Sanitary Station	503	
Re-imbursement from Uganda Railway on account of medical services.	5,165	5,668
Total.	—	12,256

Last year the total revenue collected amounted to £11,909.

TABLE III.

RETURN OF STATISTICS OF POPULATION FOR THE YEAR 1924.

Colony and Protectorate of Kenya.	Europeans and Whites.	Africans and Others.	Asiatics.
Number of Inhabitants in 1924. ..	9,651*	2,500,000†	25,880*
Number of Births registered in 1924 ..	254	‡	x
Number of Deaths registered in 1924 ..	84	‡	x
Number of Immigrants during 1924 ..	4,079	1,871	9,807
Number of Emigrants during 1924 ..	(Figures not obtainable)		
Number of Inhabitants during 1923 ..	9,651	2,500,000	25,880

* 1921 Census.
† Approximately.
‡ Not registered.
x Not known.

TABLE IV.

1.—SUMMARY OF ROUTINE SANITARY WORK DONE DURING THE YEAR IN THE TOWN OF NAIROBI.

For the Year ending 31st December, 1924.

	Approximate Area.	Number of proclaimed open spaces
1924	6,500	1. Jeevanjee Gardens.
1923	—	2. Arboretum.
1922	—	3. City Park.

2.—POPULATION.

	Number of Natives.	Asiatics and others.	Number of Europeans.	Total Approx.
1924.	12,088 estimated.	9,001	2,339	23,428
1923.	12,000 estimated.	8,530	2,867	23,597
1922.	12,000 estimated.	8,530	2,867	23,597

3.—HOUSING.

	Number occupied by Europeans.	Number occupied by Natives and Asiatics.
Number of houses :—		
1924.	474	500
1923.	479	470
1922.	770	602
Number of huts :—		
1924.	982	
1923.	1,007	
1922.	1,224	

4.—ERECTION OF NEW BUILDINGS DURING THE YEAR.

	1924.	1923.	1922.
Number of houses built without sanction.	Nil.	Nil.	Nil.
Number of huts built without sanction ..	9	Nil.	3

ACTION TAKEN.

	Number of Prosecutions.		Number demolished.	
	Huts.	Houses.	Huts.	Houses.
1924.	Nil.	Nil.	9	Nil.
1923.	"	"	Nil.	"
1922.	"	"	"	"

5.—REMOVAL OF REFUSE.

	1924.	1923.	1922.
Number of dustbins	1,900	1,859	1,175
Number of carts at work daily to remove refuse from streets.	7	8	—
Amount of refuse removed daily. ..	14 cartloads.	16 cartloads.	—
Number of carts at work daily to remove refuse from yards and premises. ..	21	28	—
Amount of refuse removed daily from yards and premises	27 cartloads.	42 cartloads.	—
Number of men employed for removing refuse.	44	46	32

6.—MODE OF DISPOSAL OF EXCRETA, REFUSE AND OFFAL.

	Daily Average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of slaughter house and market offal.		
	1924.	1923.	1922.	1924.	1923.	1922.	1924.	1923.	1922.
Buried or trenched.	3,100	3,071	2,645	—	Nil.	Nil.	1	2	—
Burnt. ..	—	—	—	21	—	61	—	—	—
Otherwise dealt with				20 dumped.					

7.—AVERAGE DAILY NUMBER OF CARTLOADS OF CANS, BOTTLES, BROKEN CROCKERY AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS AND COMPOUNDS.

1924.	1923.	1922.
As 1923.	Included in refuse removed from yards and premises.	—

8.—WATER SUPPLY.

Nature of water supply.	1924.	1923.	1922.
Pipe-borne water :—			
Source (river, lake or spring). ..	Spring.	—	Spring.
Number of linear yards	—	—	—
Number of stand-pipes along roads.	—	—	—
Number of stand-pipes in compounds and houses.	1,853	1,653	1,617
Wells :—			
Public :—			
Number	Nil.	—	—
Number with pumps protected against surface water & mosquito-protected.	—	—	—
Private :—			
Number	Nil.	—	—
Number with pumps protected against surface water & mosquito-protected.	—	—	—

Tanks:—			
Public:—			
Number underground	—	—	—
Number mosquito-protected and served by pumps	—	—	—
Number above ground	—	—	—
Number mosquito-protected ..	—	—	—
Number of 400 gallons capacity or less	—	—	—
Number above 400 gallons. ..	5	5	5
Private:—			
Number underground	—	—	—
Number mosquito-protected ..	—	—	—
Number above ground	—	—	—
Number mosquito-protected ..	—	—	—
Number of 400 gallons capacity or less	—	—	—
Number above 400 gallons. ..	—	—	—
Nature of tanks:—			
Wood	—	—	—
Iron	—	—	—
Concrete	—	—	—
Barrels:—			
Number	—	—	—
Number mosquito-protected ..	—	—	—

9.—DRAINAGE.

	Public.	Private.
Masonry drains:—		
Linear yards of masonry drains:—		
1924.	40,660	—
1923.	40,660	—
1922.	40,290	—
Linear yards reconstructed during the year:—		
1924.	80	—
1923.	—	—
1922.	—	—
Linear yards repaired during the year:—		
1924.	200	—
1923.	70	—
1922.	143	..
Linear yards of new drains constructed during the year:—		
1924.	1,520 Sewers.	—
1923.	370	—
1922.	281	—
Earth drains or ditches cleansed:—		
Number of linear yards of ditches cleansed:—		
1924.	300,000	—
1923.	6,400	—
1922.	354,457	—
Number of linear yards of ditches dug and graded:—		
1924.	20,000	—
1923.	—	—
1922.	300,584	—
Average frequency of clearing ditches of grass:—		
1924.	Monthly.	—
1923.	Every second week.	—
1922.	—	—

10.—INSPECTIONS AND PROSECUTIONS.

	1924.	1923.	1922.
Number of inspectors employed ..	4	4	6
Number of houses inspected	9,610	2,177	9,169
Number of houses where larvae were found	—	—	—
Number of notices served to remove conditions causing the breeding of larvae.	101	112	—
Number of persons fined for having mosquito larvae on premises	Magistrate's Orders 1	—	—
Number of notices served to remove insanitary conditions on premises ..	352	417	—
Number of persons fined for not removing insanitary conditions after notice ..	Magistrate's Orders 15	65	—
Number of soda and aerated water factories inspected	3	2	3

1.—SUMMARY OF ROUTINE SANITARY WORK DONE DURING THE YEAR IN THE TOWN OF MOMBASA.

For the Year ending 31st December, 1924.

	Approximate Area. Township Island.	Number of proclaimed open spaces.
1924. ..	3,500 acres.	1 Public Garden.
1923. ..	3,500 acres.	1 Public Garden.
1922. ..	3,500 acres.	1 Public Garden.

2.—POPULATION.

	Natives.	Asiatics.	Europeans.	Other Races.	Total Approx.
1924.					
Males. ..	10,840	7,001	507	120	
Females ..	7,920	3,805	160	61	41,968
Children. ..	6,936	4,411	154	53	
1923.					
Males. ..	11,211	5,654	509	—	
Females. ..	8,431	2,655	147	—	39,217
Children ..	6,744	3,716	150	—	
1922.					
Males ..	11,676	5,839	499	—	
Females. ..	10,253	2,854	108	—	40,775
Children ..	5,240	4,161	145	—	

3.—HOUSING.

	Number occupied by Europeans.	Number occupied by Natives and Asiatics.
Number of houses :—		
1924.	218 approx.	5,568 approx.
1923.	209 approx.	4,492 approx.
1922.	200 approx.	5,100 approx.
Number of huts :—		
1924.	Included in above.	
1923.	Included in above.	
1922.	Included in above.	

4.—ERECTION OF NEW BUILDINGS DURING THE YEAR.

	1924.	1923.	1922.
Number of houses built without sanction.	—	1	—
Number of huts built without sanction ..	—	—	—

ACTION TAKEN.

	Number of Prosecutions.		Number demolished.	
	Huts.	Houses.	Huts.	Houses.
1924.	Nil.	Nil.	Nil.	Nil.
1923.	Nil.	1	Nil.	Nil.
1922.	Nil.	5	Nil.	Nil.

5.—REMOVAL OF REFUSE.

		1924.	1923.	1922.
Number of dustbins	Private.	No record.	—	No record.
	Public.	12	60	60
Number of carts at work daily to remove refuse from streets.		19	19	16
Amount of refuse removed daily. ..		57 loads.	57 loads.	48 loads.
Number of carts at work daily to remove refuse from yards and premises. ..		Included above.	Included above.	Included above.
Amount of refuse removed daily from yards and premises		Included above.	Included above.	Included above.
Number of men employed for removing refuse.	Town.	229 Sweepers.	221 Sweepers.	207
	U. Rly.	30 Sweepers.	31 Sweepers.	36

6.—MODE OF DISPOSAL OF EXCRETA, REFUSE AND OFFAL.

	Daily Average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of slaughter house and market offal.		
	1924.	1923.	1922.	1924.	1923.	1922.	1924.	1923.	1922.
Buried or trenched.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.
Burnt. Town.	Nil.	Nil.	Nil.	57	57	48	3	3	1
U. Rly.	713	735	760	17	15	12	Nil.	Nil.	Nil.
Thrown into sea. Town.	460	454	—	—	—	—	—	—	—
Otherwise dealt with.	—	—	—	—	—	—	—	—	—

7.—AVERAGE DAILY NUMBER OF CARTLOADS OF CANS, BOTTLES, BROKEN CROCKERY AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS AND COMPOUNDS.

1924.	1923.	1922.
Included in refuse collection.	Included in refuse collection.	

8.—WATER SUPPLY.

Nature of water supply.	1924.	1923.	1922.
Pipe-borne water:—			
Source (river, lake or spring). ..	Springs.	Springs.	Springs.
Number of linear yards	—	—	—
Number of stand-pipes along roads.	25 Water Kiosks.	23 Water Kiosks.	32
Number of stand-pipes in compounds and houses.	702	523	390
Wells:—	No record.	—No record.—	
Public:—			
Number			
Number with pumps protected against surface water & mosquito-protected.			
Private:—			
Number			
Number with pumps protected against surface water & mosquito-protected.			
Tanks:—	Nil.	Nil.	Nil.
Public:—			
Number underground			
Number mosquito-protected and served by pumps			
Number above ground			
Number mosquito-protected ..			
Number of 400 gallons capacity or less			
Number above 400 gallons. ..			
Private:—	No record.	—No record.—	
Number underground			
Number mosquito-protected ..			
Number above ground			
Number mosquito-protected ..			
Number of 400 gallons capacity or less			
Number above 400 gallons. ..			
Nature of tanks:—	No record.	—No record.—	
Wood			
Iron			
Concrete			
Barrels:—			
Number			
Number mosquito-protected ..			

9.—DRAINAGE.

	Public.	Private.
Masonry drains:—		
Linear yards of masonry drains:—		
1924.	No record.	No record.
1923.		
1922.		
Linear yards reconstructed during the year:—		
1924.	No record.	No record.
1923.		
1922.		
Linear yards repaired during the year:—		
1924.	No record.	No record.
1923.		
1922.		
Linear yards of new drains constructed during the year:—		
1924.	No record.	No record.
1923.		
1922.		
Earth drains or ditches cleansed:—		
Number of linear yards of ditches cleansed:—		
1924.	No record.	No record.
1923.		
1922.		
Number of linear yards of ditches dug and graded:—		
1924.	No record.	No record.
1923.		
1922.		
Average frequency of clearing ditches of grass:—		
1924.	As required.	As required.
1923.		
1922.		

10.—INSPECTIONS AND PROSECUTIONS.

	1924.	1923.	1922.
Number of inspectors employed average.	3	3	3
Number of houses inspected including (A) General, (B) Licensed Premises, (C) Water Supply, (D) Disinfections, (E) Food.	14,493	7,285	7,860
Number of houses where larvae were found	No record.	No record.	No record.
Number of notices served to remove conditions causing the breeding of larvae..	63	18	180
Number of persons fined for having mosquito larvae on premises	1	10	61
Number of notices served to remove insanitary conditions on premises ..	224	345	677
Number of persons fined for not removing insanitary conditions after notice .. 9 Court Orders obtained.	1	4	23
Number of soda and aerated water factories inspected	4	4	4

1.—SUMMARY OF ROUTINE SANITARY WORK DONE DURING THE YEAR IN THE TOWN OF KISUMU.

For the Year ending 31st December, 1924.

	Approximate Area.	Number of proclaimed open spaces.
1922.	19.6	1
1923.	15.6	1
1924.	15.6	1

2.—POPULATION.

	Number of Natives.		Number of Asiatics.		Number of Europeans.		Total Approx.
	Males.	Females.	Males.	Females.	Males.	Females.	
1922.	2,945	998	901	301	96	48	5,289
1923.	3,727	1,243	700	288	98	53	6,109
1924.	3,781	1,269	668	282	99	42	6,141

3.—HOUSING.

	Number occupied by Europeans.	Number occupied by Natives and Asiatics.
Number of houses:—		
1922.	57	152
1923.	58	152
1924.	58	160
Number of huts:—		
1922.	1,240	
1923.	1,257	
1924.	1,275	

4.—ERECTION OF NEW BUILDINGS DURING THE YEAR.

	1922.	1923.	1924.
Number of houses built without sanction.	Nil.	Nil.	Nil.
Number of huts built without sanction ..	Nil.	3	Nil.

ACTION TAKEN.

	Number of Prosecutions.		Number demolished.	
	Huts.	Houses.	Huts.	Houses.
1922.	1	Nil.	1	Nil.
1923.	1	Nil.	4	Nil.
1924.	Nil.	Nil.	2	1

5.—REMOVAL OF REFUSE.

	1922.	1923.	1924.
Number of dustbins	420	410	433
Number of carts at work daily to remove refuse from streets.	4	4	4
	———	Cart loads.	———
Amount of refuse removed daily. ..	40	39	30
Number of carts at work daily to remove refuse from yards and premises. ..	11	11	8
	———	Cart loads.	———
Amount of refuse removed daily from yards and premises	30	27	16
Number of men employed for removing refuse.	36	34	26

6.—MODE OF DISPOSAL OF EXCRETA. REFUSE AND OFFAL.

	Daily Average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of slaughter house and market offal.		
	1922	1923	1924	1922.	1923.	1924.	1922.	1923.	1924.
Buried or trenched.	693	688	737	1	1	Nil.	1	1	Nil.
Burnt.	Nil.	Nil.	Nil.	30	27	25	Nil.	Nil.	1
Thrown into sea.	Nil.	Nil.	Nil.	1	Nil.	Nil.	Nil.	Nil.	Nil.
Otherwise dealt with	Nil.	Nil.	Nil	10	12	Nil.	Nil.	Nil.	Nil.

7.—AVERAGE DAILY NUMBER OF CARTLOADS OF CANS, BOTTLES, BROKEN CROCKERY AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS AND COMPOUNDS.

1922.	1923.	1924.
3	3	4

8.—WATER SUPPLY.

Nature of water supply.	1922.	1923.	1924.
Pipe-borne water:—			
Source (river, lake or spring). ..	Lake.	Lake.	Lake.
Number of stand-pipes along roads.	15	15	15
Number of stand-pipes in compounds and houses.	86	88	89
Wells:—			
Public:—			
Number	Nil.	Nil.	Nil.
Number with pumps protected against surface water & mosquito-protected.	Nil.	Nil.	Nil.
Private:—			
Number	Nil.	Nil.	Nil.
Number with pumps protected against surface water & mosquito-protected.	Nil.	Nil.	Nil.
Tanks:—			
Public:—			
Number underground	Nil.	Nil.	Nil.
Number mosquito-protected and served by pumps			
Number above ground			
Number mosquito-protected .			
Number of 400 gallons capacity or less			
Number above 400 gallons. ..			
Private:—			
Number underground	Nil.	Nil.	Nil.
Number mosquito-protected ..	Nil.	Nil.	Nil.
Number above ground	201	208	216
Number mosquito-protected ..	201	208	216
Nature of tanks:—			
Wood	Nil.	Nil.	Nil.
Iron	77	56	57
Concrete	124	152	159
Barrels:—			
Number	Nil.	unknown.	unknown.
Number mosquito-protected ..	Nil.	unknown.	unknown.

9.—DRAINAGE.

	Public.	Private.
Masonry drains:—		
Linear yards of masonry drains:—		
1922.	110	500
1923.	5,010	500
1924.	6,440	1,060
Linear yards reconstructed during the year:—		
1922.	Nil.	Nil.
1923.	800	Nil.
1924.	1,600	300
Linear yards repaired during the year:—		
1922.	Nil.	Nil.
1923.	1,200	Nil.
1924.	2,250	300
Linear yards of new drains constructed during the year:—		
1922.	Nil.	500
1923.	4,900	Nil.
1924.	1,430	560

Earth drains or ditches cleansed :—		
Number of linear yards of ditches cleansed :—		
1922.	37,600	Nil.
1923.	60,600	Nil.
1924.	70,000	Nil.
Number of linear yards of ditches dug and graded :—		
1922.	17,600	Nil.
1923.	21,800	Nil.
1924.	25,000	Nil.
Average frequency of clearing ditches of grass :—		
1922.	monthly.	monthly.
1923.	when necessary.	when necessary.
1924.	when necessary.	when necessary.

10.—INSPECTIONS AND PROSECUTIONS.

	1922.	1923.	1924.
Number of inspectors employed ..	1	1 (part time)	1
Number of houses inspected	6,700 app.	4,000 app.	4,000 app.
Number of houses where larvae were found	66	78	42
Number of notices served to remove conditions causing the breeding of larvae.	114	10	4
Number of persons fined for having mosquito larvae on premises	Nil.	Nil.	Nil.
Number of notices served to remove insanitary conditions on premises ..	267	78	45
Number of persons fined for not removing insanitary conditions after notice ..	Nil.	Nil.	Nil.
Number of soda and aerated water factories inspected	1	1	1

TABLE V.

METEOROLOGICAL RETURN FOR THE YEAR 1924.

KABETE REFORMATORY.

MONTH.	TEMPERATURE.						RAINFALL.		WINDS.		REMARKS.
	Solar Maximum.	Maximum on grass.	Shade Maximum.	Range.	Max. and Min. Mean Combined.	Shade Minimum.	Amount in inches.	Degree of Humidity.	General Direction.	Average Force.	
January	No observations.	46	79	29	64.5	50	0.20	60	N.E.	3.5	
February		46	82	33	65.5	49	2.47	78	,,	2.8	
March		55	81	28	67.0	53	7.18	74	,,	2.8	
April		55	75	18	66.0	57	11.39	82	,,	1.9	
May		50	77	25	64.5	52	4.25	81	,,	1.1	
June		45	74	24	62.0	50	0.98	86	,,	1.6	
July		43	73	26	60.0	47	1.10	84	,,	1.3	
August		46	70	19	60.5	51	3.04	87	,,	1.6	
September		46	75	26	62.0	49	0.69	85	,,	1.7	
October		49	78	24	66.0	54	1.52	69	,,	2.6	
November		46	71	18	62.0	53	7.90	84	,,	2.1	
December		48	75	22	64.0	53	4.10	73	,,	2.8	
Year Average.		48	76	24	64.0	52	Total. 44.82	78.7		2.1	

METEOROLOGICAL RETURN FOR THE YEAR 1924.

MOMBASA.

MONTH.	TEMPERATURE.						RAINFALL.		WINDS.		REMARKS.
	Solar Maximum.	Maximum on grass.	Shade Maximum.	Range.	Max. and Min. Mean Combined.	Shade Minimum.	Amount in inches.	Degree of Humidity.	General Direction.	Average Force.	
January	No observations.	No observations.	91	17	82.0	74	·0.56	74	No observations.	No observations.	
February			90	15	82.5	75	1.14	74			
March			89	6	86.0	83	2.60	78			
April			86	15	78.5	71	6.51	78			
May			84	12	78.0	72	6.08	88			
June			84	9	79.5	75	9.77	91			
July			83	7	79.5	76	2.42	84			
August			84	7	80.5	77	1.92	87			
September			85	7	81.5	78	1.83	86			
October			85	6	82.0	79	0.33	82			
November			86	6	83.0	80	0.76	86			
December			88	9	83.5	79	1.21	85			
Year Average.			86	9.7	81.5	77	Total. 35.13	83			

METEOROLOGICAL RETURN FOR THE YEAR 1924.

KISUMU.

MONTH.	TEMPERATURE.						RAINFALL.		WINDS.		REMARKS.
	Solar Maximum.	Maximum on grass.	Shade Maximum.	Range.	Max. and Min. Mean Combined.	Shade Minimum.	Amount in inches.	Degree of Humidity.	General Direction.	Average Force.	
January			86	—	74.5	63	0.00	86			
February			83	—	72.5	62	3.25	81			
March			84	—	75.0	66	4.46	58			Records unreliable.
April	No observations.	No observations.	87	—	—	81	7.92	—	No observations.	No observations.	
May			88	—	—	81	2.91	—			
June			92	—	—	82	1.94	—			
July			94	—	—	81	1.35	—			
August			95	—	—	81	3.91	—			
September			89	—	—	82	3.90	—			
October			89	—	—	81	0.88	—			
November			89	—	—	81	3.99	—			
December			88	—	—	80	1.88	—			
Year Average.			89	—	—	77	Total. 36.39	—			

METEOROLOGICAL RETURN FOR THE YEAR 1924.

FORT-HALL.

MONTH.	TEMPERATURE.						RAINFALL.		WINDS.		REMARKS.
	Solar Maximum.	Maximum on grass.	Shade Maximum.	Range.	Max. and Min. Mean Combined.	Shade Minimum.	Amount in inches.	Degree of Humidity.	General Direction.	Average Force.	
January			82	30	67.0	52	0.00	47			
February			80	25	67.5	55	0.08	61			
March			84	28	70.0	56	4.76	56			
April	No observations.	No observations.	79	20	69.0	59	6.17	97	No observations.	No observations.	
May			78	21	67.5	57	2.91	95			
June			79	27	65.5	52	4.54	93			
July			75	24	63.0	51	0.90	78			
August			76	22	60.0	54	0.55	86			
September			80	27	66.5	53	0.09	61			
October			81	26	68.0	55	2.85	74			
November			79	25	66.5	54	4.06	89			
December			79	25	66.5	54	0.62	84			
Year Average.			79	25	66.5	54	Total. 27.53	77			

TABLE SHOWING MEAN ANNUAL RAINFALL AT VARIOUS POINTS IN THE DIFFERENT AREAS FOR THE YEAR 1924.

COAST AREA.

Station.	Mean.	Average.	No. of Years.
Malindi	46.51	39.20	31
Mombasa	35.13	46.70	34
Mazeras (Uganda Railway)	15.07	45.78	18
Mackinnon Road (Uganda Railway)	27.32	26.36	21
Voi (Uganda Railway)	24.43	22.19	20

MOUNTAINOUS AREA.

Station.	Mean.	Average.	No. of Years.
Masongaleni (Uganda Railway)	37.43	23.37	18
Makindu (Uganda Railway)	33.61	29.87	21
Kiu (Uganda Railway)	15.00	23.48	18
Athi River (Uganda Railway)	14.46	25.34	20
Nairobi (Dept. of Agriculture)	26.70	37.29	9
Kabete Laboratory	28.00	42.09	9
Naivasha (Uganda Railway)	23.08	29.91	21
Nakuru (Uganda Railway)	29.05	36.28	21
Molo (Uganda Railway)	47.11	58.12	20
Eldama Ravine	35.01	40.59	4

NYANZA AND KENYA PROVINCE.

Station.	Mean.	Average.	No. of Years.
Lumbwa (Uganda Railway)	45.75	49.40	20
Muhoroni (Uganda Railway)	49.93	66.23	20
Kisumu	36.39	45.51	22
Mumias (Kakamega)	74.57	72.80	27
Kericho	65.84	70.97	20
Nandi	54.23	65.13	19
Fort-Hall	27.53	46.08	24
Nyeri	36.72	36.98	21
West Kenya (Kenya Park)	21.66	25.30	11

DESERT AREA.

Station.	Mean.	Average.	No. of Years.
Moyale	25.15	28.00	9
Lodwar (Turkana)	4.21	5.25	3
Sankuri (Tana)	7.57	13.95	3

TABLE VI.

RETURN OF DISEASES & DEATHS (IN-PATIENTS) FOR THE YEAR 1924.

DISEASES.	EUROPEAN OFFICIALS.					GENERAL EUROPEAN POPULATION.				
	Remaining in Hospital at end of 1923.	YEARLY TOTAL.		Total cases treated.	Remaining in Hospital at end of 1924.	Remaining in Hospital at end of 1923.	YEARLY TOTAL.		Total cases treated.	Remaining in Hospital at end of 1924.
		Admissions.	Deaths.				Admissions.	Deaths.		
INFECTIVE DISEASES.										
Beri-beri	—	—	—	—	—	—	—	—	—	—
Cerebro-spinal Fever	—	—	—	—	—	—	—	—	—	—
Chicken-pox	—	—	—	—	—	—	—	—	—	—
Cholera	—	—	—	—	—	—	—	—	—	—
Dengue	—	—	—	—	—	—	—	—	—	—
Diphtheria	—	—	—	—	—	—	5	—	5	—
Dysentery	—	12	—	12	—	—	29	1	29	—
Endocarditis-Infective	—	—	—	—	—	—	—	—	—	—
Enteric	—	2	—	2	—	—	7	—	7	1
Erysipelas	—	—	—	—	—	—	2	—	2	—
Gonorrhoea	—	—	—	—	—	—	—	—	—	—
Influenza	—	98	—	98	2	—	50	—	50	2
Kala Azar	—	—	—	—	—	—	—	—	—	—
Leprosy—										
(a) Nodular	—	—	—	—	—	—	—	—	—	—
(b) Anaesthetic	—	—	—	—	—	—	—	—	—	—
Malaria.—										
(a) Sub-Tertian	—	57	—	57	1	1	74	2	75	—
(b) Benign Tertian	—	13	—	13	—	2	11	—	13	—
(c) Quartan	—	3	—	3	—	—	—	—	—	—
(d) Undifferentiated	1	54	—	55	—	—	70	1	70	1
(e) Black-water	—	2	1	2	—	—	6	3	6	—
Measles	—	—	—	—	—	—	—	—	—	—
Malta Fever	—	—	—	—	—	—	—	—	—	—
Plague	—	—	—	—	—	—	—	—	—	—
Pneumonia	—	—	—	—	—	—	7	2	7	—
Rabies	—	—	—	—	—	—	—	—	—	—
Relapsing Fever	—	—	—	—	—	—	2	—	2	—
Rheumatic Fever	—	—	—	—	—	—	—	—	—	—
Septicaemia	—	1	—	1	—	—	—	—	—	—
Trypanosomiasis (Sl. Sickness).	—	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Syphilis—										
(a) Primary	—	—	—	—	—	—	—	—	—	—
(b) Secondary	—	—	—	—	—	—	—	—	—	—
(c) Inherited	—	—	—	—	—	—	—	—	—	—
Tetanus	—	—	—	—	—	—	—	—	—	—
Tuberculosis	—	2	1	2	—	—	7	—	7	—
Whooping Cough	—	—	—	—	—	—	—	—	—	—
Yaws	—	—	—	—	—	—	1	—	1	—
Yellow Fever	—	—	—	—	—	—	—	—	—	—
Mumps	—	2	—	2	—	—	—	—	—	—
Anthrax	—	—	—	—	—	—	—	—	—	—
Typhus	—	3	—	3	—	—	3	—	3	—
Other Infectious Diseases	—	2	—	2	—	—	1	—	1	—
INTOXICATIONS.										
Alcoholism	—	—	—	—	—	—	2	—	2	—
Morphinism	—	—	—	—	—	—	—	—	—	—
Others	—	—	—	—	—	—	1	—	1	—
GENERAL DISEASES.										
Anaemia	—	1	—	1	—	—	3	—	3	—
Anaemia-Pernicious	—	—	—	—	—	—	—	—	—	—
Diabetes	—	—	—	—	—	—	—	—	—	—
Exophthalmic Goitre	—	—	—	—	—	—	1	—	1	—
Gout	—	1	—	1	—	—	1	—	1	—
Leucocythaemia	—	—	—	—	—	—	—	—	—	—
Hodgkin's Disease	—	—	—	—	—	—	1	—	1	—

TABLE VI.

RETURN OF DISEASES & DEATHS (IN-PATIENTS) FOR THE YEAR 1924.

DISEASES.	EUROPEAN OFFICIALS.					GENERAL EUROPEAN POPULATION.				
	Remaining in Hospital at end of 1924.	Yearly Total.		Total cases treated.	Remaining in Hospital at end of 1924.	Remaining in Hospital at end of 1923.	Yearly Total.		Total cases treated.	Remaining in Hospital at end of 1924.
		Admissions.	Deaths.				Admissions.	Deaths.		
Myxoedema	—	—	—	—	—	—	—	—	—	—
Purpura	—	—	—	—	—	—	—	—	—	—
Rickets	—	—	—	—	—	—	—	—	—	—
Scurvy	—	—	—	—	—	—	—	—	—	—
Other General Diseases	—	8	—	8	—	—	6	—	6	—
LOCAL DISEASES.										
Diseases of the Nervous System.—										
Sub-Section 1.										
Neuritis	—	1	—	1	1	—	2	—	2	—
Meningitis	—	—	—	—	—	—	—	—	—	—
Myelitis	—	—	—	—	—	—	—	—	—	—
Hydrocephalus	—	—	—	—	—	—	—	—	—	—
Encephalitis	—	—	—	—	—	—	—	—	—	—
Abscess of Brain	—	—	—	—	—	—	—	—	—	—
Congestion of Brain	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	3	1	3	—	—	5	—	5	1
Sub-Section 2.										
Apoplexy	—	—	—	—	—	—	3	3	3	—
Paralysis	—	1	—	1	—	—	—	—	—	—
Chorea	—	—	—	—	—	—	—	—	—	—
Epilepsy	—	1	—	1	—	—	2	—	2	—
Neuralgia	—	18	—	18	1	—	—	—	—	—
Hysteria	—	1	—	1	—	—	1	—	1	—
Other Nervous Diseases	—	5	—	5	—	—	4	—	4	—
Mental Diseases.										
Sub-Section 3.										
Idiocy	—	—	—	—	—	—	—	—	—	—
Mania	—	—	—	—	—	—	1	—	1	—
Malancholia	—	—	—	—	—	3	—	—	3	—
Dementia	—	—	—	—	—	1	1	2	2	—
Delusional Insanity	—	—	—	—	—	—	2	—	2	—
Other Mental Diseases	—	—	—	—	—	2	16	1	18	—
Diseases of the Eye.—										
Conjunctivitis	—	4	—	4	—	—	2	—	2	—
Keratitis	—	—	—	—	—	—	—	—	—	—
Ulceration of Cornea	—	1	—	1	—	—	—	—	—	—
Iritis	—	—	—	—	—	—	—	—	—	—
Optic Neuritis	—	—	—	—	—	—	1	—	1	—
Cataract	—	—	—	—	—	—	—	—	—	—
Other Eye Diseases	—	4	—	4	—	—	5	—	5	—
Diseases of Ear.—										
Inflammation	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	3	—	3	—	—	7	—	7	1
Diseases of Nose.	—	11	—	11	—	—	—	—	—	—
Diseases of the Circulatory System.										
Pericarditis	—	—	—	—	—	—	—	—	—	—
Endocarditis	—	—	—	—	—	—	1	—	1	—
Valvular Mitral	—	—	—	—	—	—	—	—	—	—
,, Aortic	—	—	—	—	—	—	—	—	—	—
,, Tricuspid	—	—	—	—	—	—	—	—	—	—
,, Pulmonary	—	—	—	—	—	—	—	—	—	—
Arterial Sclerosis	—	—	—	—	—	—	—	—	—	—
Aneurism	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	10	—	10	1	—	6	—	6	—
Diseases of the Respiratory System.										
Laryngitis	—	1	—	1	—	—	—	—	—	—
Bronchitis	1	11	—	12	—	—	12	—	12	—

TABLE VI.

RETURN OF DISEASES & DEATHS (IN-PATIENTS) FOR THE YEAR 1924.

DISEASES.	EUROPEAN OFFICIALS.					GENERAL EUROPEAN POPULATION.				
	Remaining in Hospital at end of 1923.	YEARLY TOTAL.		Total cases treated.	Remaining in Hospital at end of 1924.	Remaining in Hospital at end of 1923.	YEARLY TOTAL.		Total cases treated.	Remaining in Hospital at end of 1924.
		Admissions.	Deaths.				Admissions.	Deaths.		
Broncho-pneumonia	—	1	—	1	—	—	—	—	—	—
Abscess of Lung	—	—	—	—	—	—	—	—	—	—
Gangrene of Lung	—	—	—	—	—	—	—	—	—	—
Emphysema	—	—	—	—	—	—	—	—	—	—
Pleurisy	1	1	—	2	1	—	2	—	2	—
Empyema	—	—	—	—	—	—	2	—	2	—
Other Diseases	—	9	—	9	—	—	20	1	20	—
Diseases of the Digestive System.										
Stomatitis	—	3	—	3	—	—	1	—	1	—
Caries of Teeth	—	12	—	12	1	—	11	—	11	—
Glossitis	—	—	—	—	—	—	—	—	—	—
Sore Throat	—	7	—	7	—	—	2	—	2	—
Inflammation of Tonsils	—	25	—	25	—	—	17	—	17	1
Gastritis	—	5	—	5	—	—	12	—	12	—
Ulceration of Stomach	—	1	—	1	—	—	—	—	—	—
Haematemises	—	1	—	1	—	—	—	—	—	—
Dilatation of Stomach	—	—	—	—	—	—	—	—	—	—
Stricture of Stomach	—	—	—	—	—	—	—	—	—	—
Dyspepsia	—	2	—	2	—	—	5	—	5	—
Enteritis	—	1	—	1	—	—	4	1	4	—
Appendicitis	—	4	—	4	—	1	27	—	28	—
Colitis	—	5	—	5	—	—	—	—	—	—
Ulceration of Intestines	—	—	—	—	—	—	—	—	—	—
Sprue	—	—	—	—	—	—	3	—	3	—
Hernia	—	3	—	3	—	—	2	—	2	—
Diarrhoea	—	12	—	12	1	—	9	—	9	—
Constipation	—	4	—	4	—	—	2	—	2	—
Colic	—	8	—	8	—	—	8	—	8	—
Haemorrhoids	—	2	—	2	—	—	2	—	2	—
Pancreatitis	—	—	—	—	—	—	—	—	—	—
Hepatitis (Acute)	—	3	—	3	—	—	6	1	6	—
Abscess	—	—	—	—	—	1	—	—	1	—
Cirrhosis	—	—	—	—	—	—	1	1	1	—
Jaundice	—	—	—	—	—	—	1	—	1	—
Peritonitis	—	—	—	—	—	—	1	1	1	—
Ascites	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	11	—	11	1	—	13	—	13	—
Diseases of the LymphaticSystem.										
Splenitis	—	—	—	—	—	—	—	—	—	—
Inflammation of Lymphatic Gland	—	—	—	—	—	—	—	—	—	—
Suppuration of Lymphatic Gland	—	—	—	—	—	—	—	—	—	—
Lymphangitis	—	—	—	—	—	—	2	—	2	—
Elephantiasis	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	—	—	—	—	—	2	—	2	—
Diseases of the Urinary System.—										
Acute Nephritis	—	—	—	—	—	—	2	—	2	—
Bright's Disease	—	—	—	—	—	—	—	—	—	—
Pyelitis	—	—	—	—	—	—	2	—	2	—
Calculus	—	—	—	—	—	—	—	—	—	—
Renal Colic	—	—	—	—	—	—	1	—	1	—
Cystitis	—	2	—	2	—	—	3	—	3	—
Vesical Calculus	—	—	—	—	—	—	—	—	—	—
Suppression	—	—	—	—	—	—	—	—	—	—
Haematuria	—	—	—	—	—	—	1	—	1	—
Chyluria	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	2	—	2	—	—	5	1	5	—

TABLE VI.

RETURN OF DISEASES & DEATHS (IN-PATIENTS) FOR THE YEAR 1924.

DISEASES.	EUROPEAN OFFICIALS.					GENERAL EUROPEAN POPULATION.				
	Remaining in Hospital at end of 1923.	Yearly Total.		Total cases treated.	Remaining in Hospital at end of 1923.	Remaining in Hospital at end of 1923.	Yearly Total.		Total cases treated.	Remaining in Hospital at end of 1923.
		Admissions.	Deaths.				Admissions.	Deaths.		
Diseases of the Generative System.										
Male Organs.										
Urethritis	—	—	—	—	—	—	—	—	—	—
Gleet	—	—	—	—	—	—	—	—	—	—
Stricture	—	—	—	—	—	—	1	—	1	—
Prostatitis	—	—	—	—	—	—	2	—	2	—
Soft Chancre	—	—	—	—	—	—	—	—	—	—
Condyloma	—	—	—	—	—	—	—	—	—	—
Inflammation of Scrotum ..	—	—	—	—	—	—	—	—	—	—
Hydrocele	—	—	—	—	—	—	—	—	—	—
Orchitis	—	2	—	2	—	—	1	—	1	—
Epididymitis	—	—	—	—	—	—	—	—	—	—
Abscess of Testicle	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	1	—	1	—	—	9	—	9	—
Female Organs.										
Ovaritis	—	—	—	—	—	—	—	—	—	—
Ovarian Cyst	—	—	—	—	—	—	1	—	1	—
Endometritis	—	—	—	—	—	—	2	—	2	—
Displacement of Uterus ..	—	—	—	—	—	—	4	—	4	—
Vaginitis	—	—	—	—	—	—	—	—	—	—
Amenorrhoea	—	—	—	—	—	—	7	—	7	—
Dysmenorrhoea	—	—	—	—	—	—	1	—	1	—
Menorrhagia	—	—	—	—	—	—	1	—	1	—
Leucorrhoea	—	—	—	—	—	—	—	—	—	—
Abortion	—	—	—	—	—	—	4	—	4	—
Delayed Labour	—	—	—	—	—	—	—	—	—	—
Post-partem Haemorrhage ..	—	—	—	—	—	—	—	—	—	—
Retained Placenta	—	—	—	—	—	—	1	—	1	—
Premature Birth	—	—	—	—	—	—	1	—	1	—
Puerperal Septicaemia	—	—	—	—	—	—	—	—	—	—
Mastitis	—	—	—	—	—	—	—	—	—	—
Abscess of Breast	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	—	—	—	—	—	19	—	19	1
Diseases of the Organs of Locomotion.—										
Osteitis	—	—	—	—	—	—	1	—	1	—
Arthritis	—	—	—	—	—	—	—	—	—	—
Spondylitis	—	—	—	—	—	—	—	—	—	—
Bursitis	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	30	—	30	—	—	12	—	12	—
Diseases of the Connective Tissue.										
Cellulitis	—	3	—	3	—	—	13	—	13	—
Abscess	—	3	—	3	—	—	9	—	9	—
Elephantiasis	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	1	—	1	—	—	1	—	1	—
Diseases of the Skin.—										
Urticaria	—	2	—	2	—	—	2	—	2	—
Eczema	—	—	—	—	—	—	1	—	1	—
Boil	—	4	—	4	—	—	5	—	5	—
Carbuncle	—	1	—	1	—	—	—	—	—	—
Herpes	—	—	—	—	—	—	1	—	1	—
Psoriasis	—	—	—	—	—	—	—	—	—	—
Oriental Sore	—	—	—	—	—	—	—	—	—	—
Tinea	—	—	—	—	—	—	—	—	—	—
Scabies	—	—	—	—	—	—	—	—	—	—
Acne	—	—	—	—	—	—	—	—	—	—
Prickly Heat	—	1	—	1	—	—	—	—	—	—
Other Diseases	—	3	—	3	—	3	11	—	14	1

TABLE VI.

RETURN OF DISEASES & DEATHS (IN-PATIENTS) FOR THE YEAR 1924.

DISEASES.	EUROPEAN OFFICIALS.					GENERAL EUROPEAN POPULATION.				
	Remaining in Hospital at end of 1923.	Yearly Total.		Total cases treated.	Remaining in Hospital at end of 1924.	Remaining in Hospital at end of 1923.	Yearly Total.		Total cases treated.	Remaining in Hospital at end of 1924.
		Admissions.	Deaths.				Admissions.	Deaths.		
Injuries—General.										
Local.	—	80	1	80	3	3	68	2	71	4
*Surgical Operations	—	—	—	—	—	—	(207)	—	(207)	—
Tumours	—	—	—	—	—	—	2	—	2	—
Malformations	—	—	—	—	—	—	4	—	4	—
Poisons	—	1	—	1	—	—	—	—	—	—
Parasites—Animal										
Protozoa	—	—	—	—	—	—	—	—	—	—
Trematoda (Flukes)	—	—	—	—	—	—	—	—	—	—
Cestoda.—										
Taenia Solium	—	1	—	1	—	—	1	—	1	—
Taenia Saginata	—	1	—	1	—	—	6	—	6	—
Nematoda.—										
Ascaris	—	—	—	—	—	—	—	—	—	—
Tricocephalus Dispar	—	—	—	—	—	—	—	—	—	—
Trichina	—	—	—	—	—	—	—	—	—	—
Dracunculus	—	—	—	—	—	—	—	—	—	—
Filariasis	—	—	—	—	—	—	—	—	—	—
Strongylus	—	—	—	—	—	—	—	—	—	—
Ankylostomiasis	—	—	—	—	—	—	—	—	—	—
Oxyuris	—	—	—	—	—	—	—	—	—	—
Insecta.—										
Myiasis	—	—	—	—	—	—	2	—	2	—
Other Diseases	—	—	—	—	—	—	—	—	—	—
Total	3	594	4	597	13	17	723	23	740	13

*Recorded under respective diseases.

TABLE VI.

RETURN OF DISEASES & DEATHS (IN-PATIENTS) FOR THE YEAR 1924.

DISEASES.	NON-EUROPEAN OFFICIALS.					GENERAL NATIVE POPULATION.				
	Remaining in Hospital at end of 1923.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total cases treated.	Remaining in Hospital at end of 1924.	Remaining in Hospital at end of 1923.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total cases treated.	Remaining in Hospital at end of 1924.
INFECTIVE DISEASES.										
Beri-beri	—	—	—	—	—	—	4	—	4	—
Cerebro-spinal Fever	—	—	—	—	—	—	41	22	41	—
Chicken-pox	—	—	—	—	—	6	447	—	453	38
Cholera	—	—	—	—	—	—	—	—	—	—
Dengue	—	—	—	—	—	—	—	—	—	—
Diphtheria	—	—	—	—	—	—	6	—	6	—
Dysentery	—	17	—	17	—	4	521	53	525	20
Endocarditis-Infective	—	—	—	—	—	—	—	—	—	—
Enteric	—	1	1	1	—	1	80	7	81	4
Erysipelas	—	2	—	2	—	—	2	—	2	—
Gonorrhoea	—	6	—	6	1	22	337	—	359	17
Influenza	9	388	—	397	3	13	1028	11	1041	24
Kala Azar	—	—	—	—	—	—	—	—	—	—
Leprosy—										
(a) Nodular	—	—	—	—	—	)				
(b) Anaesthetic	—	—	—	—	—	)140	169	6	309	202
Malaria.—										
(a) Sub-Tertian	—	234	—	234	6	~~2~~	~~169~~	~~6~~	~~309~~	2
(b) Benign Tertian	1	61	—	62	1	2	591	18	593	8
(c) Quartan	—	2	—	2	—	—	136	—	136	2
(d) Undifferentiated	12	737	—	749	8	—	55	—	55	—
(e) Black-water	—	2	1	2	—	46	2499	19	2545	29
Measles	—	1	—	1	—	2	9	4	11	—
Malta Fever	—	—	—	—	—	8	47	2	55	1
Plague	—	—	—	—	—	1	10	—	11	1
Pneumonia	—	4	—	4	—	14	117	82	131	—
~~Rabies~~	—	—	—	—	—	42	911	176	953	21
Relapsing Fever	—	—	—	—	—	4	89	3	93	2
Rheumatic Fever	—	—	—	—	—	2	3	—	5	1
Septicaemia	—	1	1	1	—	—	9	8	9	1
Trypanosomiasis (Sl. Sickness).	—	—	—	—	—	4	70	1	74	18
Small-pox	—	—	—	—	—	—	4	—	4	—
Syphilis—										
(a) Primary	—	1	—	1	—	31	1038	1	1069	38
(b) Secondary	—	—	—	—	—	53	345	4	398	12
(c) Inherited	—	—	—	—	—	—	35	—	35	1
Tetanus	—	—	—	—	—	1	14	4	15	—
Tuberculosis	—	2	—	2	—	8	230	72	238	19
Whooping Cough	—	—	—	—	—	4	8	—	12	—
Yaws	—	1	—	1	—	144	6784	4	6928	130
Yellow Fever	—	—	—	—	—	—	—	—	—	—
Mumps	—	1	—	1	—	3	230	3	233	8
Anthrax	—	—	—	—	—	5	82	8	87	4
Typhus	—	—	—	—	—	—	1	1	1	—
Other Infectious Diseases	1	—	—	1	—	2	35	4	37	4
INTOXICATIONS.										
Alcoholism	—	—	—	—	—	—	4	—	4	—
Morphinism	—	—	—	—	—	—	—	—	—	—
Others	—	—	—	—	—	—	—	—	—	—
GENERAL DISEASES.										
Anaemia	—	2	—	2	—	2	19	3	21	1
Anaemia-Pernicious	—	—	—	—	—	1	2	2	3	—
Diabetes	—	—	—	—	—	—	2	1	2	—
Exophthalmic Goitre	—	—	—	—	—	—	—	—	—	—
Gout	—	2	—	2	—	—	—	—	—	—
Leucocythaemia	—	—	—	—	—	—	—	—	—	—
Hodgkin's Disease	—	—	—	—	—	—	—	—	—	—

TABLE VI.

RETURN OF DISEASES & DEATHS (IN-PATIENTS) FOR THE YEAR 1924.

DISEASES.	NON-EUROPEAN OFFICIALS.					GENERAL NATIVE POPULATION.				
	Remaining in Hospital at end of 1923.	Yearly Total.		Total cases treated.	Remaining in Hospital at end of 1924.	Remaining in Hospital at end of 1923.	Yearly Total.		Total cases treated.	Remaining in Hospital at end of 1924.
		Admissions.	Deaths.				Admissions.	Deaths.		
Myxoedema	—	—	—	—	—	—	—	—	—	—
Purpura	—	—	—	—	—	—	—	—	—	—
Rickets	—	—	—	—	—	—	1	—	1	—
Scurvy	—	—	—	—	—	—	4	1	4	—
Other General Diseases ..	—	33	—	33	—	2	95	8	97	5
LOCAL DISEASES.										
Diseases of the Nervous System.— Sub-Section 1.										
Neuritis	—	1	—	1	—	—	13	—	13	1
Meningitis	—	—	—	—	—	2	15	12	17	—
Myelitis	—	—	—	—	—	1	3	1	4	—
Hydrocephalus	—	—	—	—	—	—	—	—	—	—
Encephalitis	—	—	—	—	—	—	—	—	—	—
Abscess of Brain	—	—	—	—	—	—	—	—	—	—
Congestion of Brain	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	2	—	2	—	1	9	3	10	—
Sub-Section 2.										
Apoplexy	—	—	—	—	—	—	—	—	—	—
Paralysis	—	2	—	2	—	8	30	5	38	5
Chorea	—	—	—	—	—	—	—	—	—	—
Epilepsy	—	—	—	—	—	3	31	1	34	1
Neuralgia	—	43	—	43	—	—	75	—	75	3
Hysteria	—	—	—	—	—	—	—	—	—	—
Other Nervous Diseases ..	1	24	—	25	—	1	181	1	182	6
Mental Diseases. Sub-Section 3.										
Idiocy	—	—	—	—	—	1	1	1	2	1
Mania	—	—	—	—	—	57	38	12	95	48
Malancholia	—	—	—	—	—	1	2	—	3	—
Dementia	—	—	—	—	—	4	13	3	17	9
Delusional Insanity	—	—	—	—	—	13	6	4	19	9
Other Mental Diseases ..	—	3	—	3	—	14	30	—	44	25
Diseases of the Eye.—										
Conjunctivitis	—	40	—	40	—	3	252	—	255	5
Keratitis	—	—	—	—	—	3	17	—	20	—
Ulceration of Cornea	—	7	—	7	2	—	41	—	41	—
Iritis	—	5	—	5	—	—	22	—	22	2
Optic Neuritis	—	1	—	1	—	—	1	—	1	—
Cataract	—	1	—	1	—	—	12	—	12	—
Other Eye Diseases	—	18	—	18	—	1	58	—	59	4
Diseases of Ear.—										
Inflammation	—	—	—	—	—	1	43	2	44	—
Other Diseases	—	8	—	8	—	1	32	—	33	1
Diseases of Nose.	—	43	—	43	1	—	37	—	37	—
Diseases of the Circulatory System.										
Pericarditis	—	—	—	—	—	—	4	3	4	—
Endocarditis	—	—	—	—	—	—	2	—	2	—
Valvular Mitral	—	1	—	1	—	1	34	12	35	—
.. Aortic	—	—	—	—	—	2	1	1	3	1
.. Tricuspid	—	—	—	—	—	—	—	—	—	—
.. Pulmonary	—	—	—	—	—	—	—	—	—	—
Arterial Sclerosis	—	—	—	—	—	—	—	—	—	—
Aneurism	—	—	—	—	—	1	4	1	5	—
Other Diseases .. .	—	7	—	7	—	—	28	6	28	—
Diseases of the Respiratory System.										
Laryngitis	—	—	—	—	—	6	15	—	21	1
Bronchitis	1	122	—	123	1	25	759	—	784	8
Broncho-pneumonia	—	5	2	5	—	—	55	25	55	1

TABLE VI.

RETURN OF DISEASES & DEATHS (IN-PATIENTS) FOR THE YEAR 1924.

DISEASES.	NON-EUROPEAN OFFICIALS.					GENERAL NATIVE POPULATION.				
		Yearly Total.					Yearly Total.			
	Remaining in Hospital at end of 1923.	Admissions.	Deaths.	Total cases treated.	Remaining in Hospital at end of 1924.	Remaining in Hospital at end of 1923.	Admissions.	Deaths.	Total cases treated.	Remaining in Hospital at end of 1923.
Abscess of Lung	—	—	—	—	—	—	—	—	—	—
Gangrene of Lung	—	—	—	—	—	—	—	—	—	—
Emphysema	—	—	—	—	—	—	—	—	—	—
Pleurisy	—	2	—	2	—	—	23	—	23	1
Empyema	—	—	—	—	—	2	5	2	7	2
Other Diseases	—	16	—	16	—	3	234	4	237	—
Diseases of the Digestive System.										
Stomatitis	—	—	—	—	—	—	24	1	24	—
Caries of Teeth	—	22	—	22	1	1	18	—	19	—
Glossitis	—	—	—	—	—	—	—	—	—	—
Sore Throat	—	10	—	10	—	—	28	—	28	1
Inflammation of Tonsils ..	—	29	—	29	—	1	79	—	80	—
Gastritis	—	13	—	13	—	—	34	—	34	—
Ulceration of Stomach	—	—	—	—	—	—	—	—	—	—
Haematemises	—	1	—	1	—	—	1	—	1	—
Dilatation of Stomach	—	—	—	—	—	—	—	—	—	—
Stricture of Stomach	—	—	—	—	—	—	—	—	—	—
Dyspepsia	—	9	—	9	—	1	36	—	37	3
Enteritis	—	3	—	3	—	—	6	2	6	—
Appendicitis	—	4	—	4	—	—	12	1	12	—
Colitis	—	3	—	3	—	—	20	—	20	—
Ulceration of Intestines ..	—	—	—	—	—	—	1	1	1	—
Sprue	—	—	—	—	—	—	—	—	—	—
Hernia	—	1	—	1	—	2	33	3	35	3
Diarrhoea	—	49	—	49	1	5	357	3	362	7
Constipation	1	33	—	34	—	1	105	—	106	—
Colic	—	53	—	53	1	—	128	—	128	—
Haemorrhoids	—	18	—	18	—	—	5	—	5	—
Pancreatitis	—	—	—	—	—	—	—	—	—	—
Hepatitis (Acute)	—	7	—	7	1	1	29	3	30	2
Abscess	—	—	—	—	—	1	13	5	14	2
Cirrhosis	—	—	—	—	—	1	2	2	3	1
Jaundice	—	—	—	—	—	1	9	—	10	—
Peritonitis	—	—	—	—	—	—	7	4	7	—
Ascites	—	—	—	—	—	—	15	—	15	3
Other Diseases	1	20	—	21	—	1	64	9	65	3
Diseases of the LymphaticSystem.										
Splentis	—	3	—	3	—	3	43	1	46	1
Inflammation of Lymphatic Gland	—	6	—	6	1	4	99	1	103	4
Suppuration of Lymphatic Gland	—	—	—	—	—	5	23	—	28	5
Lymphangitis	—	—	—	—	—	—	8	—	8	—
Elephantiasis	—	—	—	—	—	—	6	—	6	—
Other Diseases	—	—	—	—	—	—	8	—	8	1
Diseases of the Urinary System.- --										
Acute Nephritis .. .	—	2	—	2	—	—	11	3	11	—
Bright's Disease	—	—	—	—	—	—	12	5	12	—
Pyelitis	—	—	—	—	—	—	1	1	1	—
Calculus	—	—	—	—	—	—	—	—	—	—
Renal Colic	—	1	—	1	—	—	—	—	—	—
Cystitis	—	3	—	3	—	—	3	2	3	—
Vesical Calculus	—	—	—	—	—	—	—	—	—	—
Suppression	—	—	—	—	—	—	—	—	—	—
Haematuria	—	1	—	1	—	—	6	—	6	—
Chyluria	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	2	—	2	1	—	19	5	19	—

TABLE VI.

RETURN OF DISEASES & DEATHS (IN-PATIENTS) FOR THE YEAR 1924.

DISEASES.	NON-EUROPEAN OFFICIALS.					GENERAL NATIVE POPULATION.				
		YEARLY TOTAL.					YEARLY TOTAL.			
	Remaining in Hospital at end of 1923.	Admissions.	Deaths.	Total cases treated.	Remaining in Hospital at end of 1924.	Remaining in Hospital at end of 1923.	Admissions.	Deaths.	Total cases treated.	Remaining in Hospital at end of 1924.
Diseases of the Generative System.										
Male Organs.										
Urethritis	—	—	—	—	—	—	1	—	1	—
Gleet	—	—	—	—	—	—	3	—	3	—
Stricture	—	1	—	1	—	1	15	2	16	—
Prostatitis	—	—	—	—	—	—	—	—	—	—
Soft Chancre	—	—	—	—	—	2	26	—	28	—
Condyloma	—	—	—	—	—	—	5	—	5	1
Inflammation of Scrotum ..	—	—	—	—	—	—	—	—	—	—
Hydrocele	—	—	—	—	—	4	55	1	59	1
Orchitis	—	1	—	1	—	1	71	—	72	—
Epididymitis	—	—	—	—	—	—	11	—	11	1
Abscess of Testicle	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	2	—	2	—	2	31	—	33	2
Female Organs.										
Ovaritis	—	—	—	—	—	—	—	—	—	—
Ovarian Cyst	—	—	—	—	—	—	6	—	6	1
Displacement of Uterus ..	—	—	—	—	—	—	1	—	1	—
Vaginitis	—	—	—	—	—	—	1	—	1	1
Amenorrhoea	—	—	—	—	—	—	—	—	—	—
Dysmenorrhoea	—	—	—	—	—	—	14	—	14	—
Menorrhagia	—	—	—	—	—	—	1	—	1	—
Leucorrhoea	—	—	—	—	—	—	5	—	5	—
Abortion	—	—	—	—	—	1	14	—	15	—
Delayed Labour	—	—	—	—	—	—	21	3	21	1
Post-partem Haemorrhage ..	—	—	—	—	—	—	—	—	—	—
Retained Placenta	—	—	—	—	—	—	9	1	9	—
Premature Birth	—	—	—	—	—	—	2	—	2	—
Puerperal Septicaemia	—	—	—	—	—	—	7	3	7	—
Mastitis	—	—	—	—	—	3	8	—	11	1
Abscess of Breast	—	—	—	—	—	1	2	—	3	—
Other Diseases	—	—	—	—	—	2	26	2	28	5
Diseases of the Organs of Locomotion.—										
Osteitis	—	—	—	—	—	2	50	—	52	1
Arthritis	—	—	—	—	—	2	136	3	138	6
Spondylitis	—	—	—	—	—	—	—	—	—	—
Bursitis	—	—	—	—	—	2	5	—	7	—
Other Diseases	3	134	—	137	1	12	504	—	516	22
Diseases of the Connective Tissue.										
Cellulitis	—	8	—	8	—	2	272	1	274	11
Abscess	—	15	—	15	1	33	306	12	339	22
Elephantiasis	—	—	—	—	—	4	17	—	21	4
Other Diseases	—	5	—	5	—	14	498	3	512	71
Diseases of the Skin.—										
Urticaria	—	8	—	8	—	—	9	—	9	1
Eczema	—	7	—	7	—	—	34	—	34	1
Boil	—	16	—	16	—	2	59	—	61	2
Carbuncle	—	—	—	—	—	—	—	—	—	—
Herpes	—	2	—	2	—	—	4	—	4	—
Psoriasis	—	—	—	—	—	—	1	—	1	—
Oriental Sore	—	—	—	—	—	—	1	1	1	—
Tinea	—	1	—	1	—	—	9	—	9	—
Scabies	—	6	—	6	—	6	146	—	152	5
Acne	—	—	—	—	—	—	1	—	1	—
Prickly Heat	—	1	—	1	—	—	3	—	3	—
Other Diseases	—	10	—	10	—	83	707	3	790	74
Injuries—General.	—	5	—	5	1	4	69	8	73	8

TABLE VI.

RETURN OF DISEASES & DEATHS (IN-PATIENTS) FOR THE YEAR 1924.

DISEASES.	NON-EUROPEAN OFFICIALS.					GENERAL NATIVE POPULATION.				
		YEARLY TOTAL.					YEARLY TOTAL.			
	Remaining in Hospital at end of 1923.	Admissions.	Deaths.	Total cases treated.	Remaining in Hospital at end of 1924.	Remaining in Hospital at end of 1923.	Admissions.	Deaths.	Total cases treated.	Remaining in Hospital at end of 1924.
Local.	1	186	—	187	6	147	2736	44	2883	152
Gun Shot Wounds.	—	—	—	—	—	1	—	—	1	—
*Surgical Operations	—	—	—	—	—	—	(340)	—	(340)	—
Tumours	—	1	—	1	—	12	142	7	154	8
Malformations	—	—	—	—	—	—	1	—	1	—
Poisons	—	—	—	—	—	1	20	2	21	2
Parasites—Animal										
Protozoa	—	—	—	—	—	—	1	—	1	—
Trematoda (Flukes)	—	—	—	—	—	—	25	2	25	1
Cestoda.—										
Taenia Solium	—	—	—	—	—	2	59	—	61	1
Taenia Saginata	—	—	—	—	—	1	85	1	86	—
Nematoda.—										
Ascaris	—	1	—	1	—	—	119	1	119	1
Tricocephalus Dispar	—	—	—	—	—	—	—	—	—	—
Trichina	—	—	—	—	—	—	—	—	—	—
Dracunculus	—	—	—	—	—	—	—	—	—	—
Filariasis	—	—	—	—	—	—	2	—	2	—
Strongylus	—	—	—	—	—	—	6	—	6	—
Ankylostomiasis	—	—	—	—	—	3	93	7	96	6
Oxyuris	—	—	—	—	—	—	3	—	3	—
Insecta.—										
Myiasis	—	2	—	2	—	—	27	—	27	3
Other Diseases	—	—	—	—	—	1	—	—	1	—
Total —	31	2554	5	2585	38	1101	25990	786	27091	1197

*Recorded under respective diseases.

TABLE VII.

RETURN OF DISEASES (OUT-PATIENTS) FOR THE YEAR 1923.

DISEASES.	EUROPEAN OFFICIALS.		GENERAL EUROPEAN POPULATION.		NON-EUROPEAN OFFICIALS.		GENERAL NATIVE POPULATION.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
INFECTIVE DISEASES:—								
Beri-Beri	—	—	—	—	—	—	1	—
Cerebro-spinal fever	—	—	—	—	—	—	—	—
Chicken-pox	—	—	—	1	—	—	70	3
Cholera	—	—	—	—	—	—	—	—
Dengue	—	—	—	—	—	—	—	—
Diphtheria	—	—	—	—	—	—	—	—
Dysentery	2	1	1	2	3	—	187	49
Endocarditis-Infective	—	—	—	—	—	—	—	—
Enteric fever	—	—	—	1	—	—	—	—
Erysipelas	—	—	—	—	—	—	2	—
Gonorrhoea	—	—	1	—	—	—	626	14
Influenza	12	1	21	4	32	—	3255	500
Kala Azar	—	—	—	—	—	—	—	—
Leprosy (a) Nodular	—	—	—	—	—	—	7	9
(b) Anaesthetic	—	—	—	—	—	—	17	8
Malaria (a) Sub-Tertian	—	—	1	—	2	—	70	12
(b) Benian Tertian	1	—	—	—	1	—	248	65
(c) Quartan	—	—	—	—	—	—	2	—
(d) Undifferentiated	23	1	10	7	102	—	11446	2227
(e) Black-water	—	—	—	—	—	—	2	—
Measles	—	—	—	—	—	—	21	5
Malta fever	—	—	—	—	—	—	—	—
Plague	—	—	—	—	—	—	—	—
Pneumonia	—	—	—	—	—	—	65	19
Rabies	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	1	—
Rheumatic fever	1	—	—	—	1	—	85	9
Septicaemia	—	—	—	—	—	—	1	2
Trypanosomiasis (Sl. Sickness)	—	—	—	—	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—
Syphilis. (a) Primary	2	—	1	—	—	—	404	153
(b) Secondary	—	—	—	—	—	—	878	551
(c) Inherited	—	—	—	—	—	—	148	138
Tetanus	—	—	—	—	—	—	1	1
Tuberculosis	1	—	—	—	—	—	108	42
Whooping cough	—	—	—	—	—	—	27	7
Yaws	—	—	—	—	—	—	8212	7167
Yellow fever	—	—	—	—	—	—	—	—
Mumps	—	—	—	—	—	—	23	2
Anthrax	—	—	—	—	—	—	1	—
Typhus	—	—	—	—	—	—	—	—
Other infective diseases	—	—	—	—	—	—	46	1
INTOXICATIONS:—								
Alcoholism	—	—	1	—	—	—	2	—
Morphinism	—	—	—	—	—	—	—	—
Others	—	—	—	—	—	—	1	—
GENERAL DISEASES:—								
Anaemia	4	—	2	5	—	—	206	22
Anaemia-Pernicious	—	—	—	—	—	—	—	—
Diabetes	—	—	—	—	1	—	5	—
Exopthalmic goitre	—	—	—	—	—	—	—	—
Gout	—	—	—	—	—	—	5	—
Leucocythaemia	—	—	—	—	—	—	—	—
Hodgkin's Disease	—	—	—	—	—	—	—	—
Myxoedema	—	—	—	—	—	—	—	—
Purpura	—	—	—	—	—	—	—	—
Rickets	—	—	—	—	—	—	—	1
Scurvy	—	—	—	—	—	—	10	4
Other general diseases	19	—	13	15	—	—	158	56
LOCAL DISEASES:—								
Diseases of the Nervous System	6	2	8	—	40	—	2603	481
Mental diseases	—	—	1	4	—	—	12	2
Diseases of the Eye	6	—	6	3	13	—	2538	1160
,, ,, Ear.	9	1	22	10	15	—	1438	414
,, ,, Nose	11	—	5	1	44	—	577	66
,, ,, Circulatory System ..	—	—	2	1	1	—	41	7
,, ,, Respiratory System ..	16	1	7	2	82	—	14094	3454
,, ,, Digestive System ..	55	2	49	37	228	—	14859	3056
,, ,, Lymphatic System ..	1	—	2	—	2	—	677	115
,, ,, Urinary System	4	1	—	2	—	—	60	10
,, ,, Generative System ..	2	1	8	12	1	—	267	396
,, ,, Organs of Locomotion ..	8	2	2	1	—	—	4556	1355
,, ,, Connective Tissue ..	9	—	10	4	28	—	2933	524
,, ,, Skin	22	—	36	8	32	—	10550	3341
INJURIES:—								
General	8	—	—	—	—	—	99	83
Local	37	1	43	11	66	—	21282	2901
Gun-shot wound	—	—	—	—	—	—	2	—
Surgical operations*	(1)	—	(17)	—	—	—	(1)	—
Tumours	—	—	1	2	—	—	12	8
Malformations	—	—	—	—	—	—	2	—
Poisons	—	—	—	—	3	—	19	1
Parasites—Animal.	2	—	2	—	9	—	2618	1024
TOTAL	261	14	255	133	706	—	105580	29465

* Recorded under respective diseases.

TABLE VIII.

EUROPEANS.

RETURN OF INFECTIVE DISEASES TREATED AT THE VARIOUS HOSPITALS AND DISPENSARIES IN THE COLONY AND PROTECTORATE OF KENYA DURING 1924.

Diseases.		Chuka.	Eldoret.	Fort-Hall.	Kakamega.	Kilindini.	Kitui.	Kismayu.	Kisumu.	Lamu.	Lodwar.	Machakos.	Malindi.	Mombasa.	Meru.	Nairobi.	Nakuru.	Nandi.	Nyeri.	Voi.	Kisii.	Total.
Diphtheria. ..	(Cases.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	—	—	—	—	—	5
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chicken-pox. ..	(Cases.	—	11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dysentery. ..	(Cases.	2	—	3	—	—	—	—	5	—	—	1	—	8	1	26	—	1	1	—	—	48
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1
Enteric fever. ..	(Cases.	—	—	—	—	—	—	1	2	—	—	—	—	2	—	4	—	—	—	—	—	9
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Erysipelas. ..	(Cases.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	2
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Influenza. ..	(Cases.	1	—	1	—	6	—	2	14	—	—	—	—	75	4	56	6	—	16	1	1	183
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Malaria. ..	(Cases.	3	10	4	5	11	3	2	37	2	2	8	2	137	5	81	5	1	21	3	6	348
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	1	—	2	—	—	—	—	—	3
Blackwater fever ..	(Cases.	—	—	—	—	—	—	—	4	—	1	—	—	2	—	—	—	—	—	—	1	8
	(Deaths.	—	—	—	—	—	—	—	1	—	—	—	—	2	—	—	—	—	—	—	1	4
Pneumonia. ..	(Cases.	—	—	—	—	—	—	—	—	—	—	—	—	4	—	3	—	—	—	—	—	7
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—	2
Relapsing fever. ..	(Cases.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	2
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Typhus. ..	(Cases.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	—	—	—	—	—	6
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Septicaemia. ..	(Cases.	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mumps. ..	(Cases.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	2
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tuberculosis ..	(Cases.	—	—	—	—	—	—	—	1	—	—	—	—	2	—	7	—	—	—	—	—	10
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1
Yaws. ..	(Cases.	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
	(Deaths.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LIBRARY

TABLE IX.

STATISTICS REGARDING ENTERIC FEVER AMONG EUROPEAN RESIDENTS IN THE COLONY AND PROTECTORATE OF KENYA, DURING 1924.

Total number admitted on account of Enteric.				Number admitted who had been previously inoculated against Enteric.		Number of cases who died.				Total number inoculated against Enteric Fever during the year.	
Officials.		Non-Officials.				Previously inoculated.		Not previously inoculated.			
Cases.	Deaths.	Cases.	Deaths.	Officials.	Non-Officials.	Officials.	Non-Officials.	Officials.	Non-Officials.	Officials.	Non-Officials.
2	—	7	—	—	—	—	—	—	—	—	19

The occurrence of the cases was as follows:—

Nairobi	4
Mombasa	2
Kisumu	2
Kismayu	1

APPENDIX "A".

ANNUAL REPORT OF THE PROCEEDINGS OF THE BOARD OF HEALTH FOR THE YEAR 1924.

(THE PUBLIC HEALTH ORDINANCE, 1913).

1. The membership of the Board consisted of:—

The Hon. Principal Medical Officer (President).
The Chief Sanitation Officer.
The Hon. Director of Public Works.
The Hon. Commissioner of Lands.
The Director of Surveys.
A. C. Tannahill, Esq.

2. Summary of work done:—

(a)	Meetings held during the year	2
(b)	Applications for Sub-divisions outstanding from previous year.	—
(c)	Applications for Sub-divisions submitted during the year. ..	5
(d)	Applications for Sub-divisions approved during the year. ..	2
(e)	Applications for Sub-divisions rejected during the year. ..	3
(f)	Applications for Sub-divisions referred back for modification.	1
(g)	Applications for Sub-divisions re-submitted.	1
(h)	Applications for Sub-divisions outstanding at end of year. ..	—

The following matters of special interest present themselves as the outcome of the year's work:—

3. As in the previous year the Board has rejected certain proposals for the sub-division of estates on the outskirts of Nairobi Township on the grounds that close development on these sites is undesirable in the absence of a satisfactory water supply, or of any system of drainage, or of any organisation for the removal and disposal of refuse and nightsoil.

The problems connected with scattered settlement on the outskirts of Nairobi Township are becoming increasingly urgent. No decision has as yet been arrived at with regard to a satisfactory solution to these problems, but the matter is under consideration by Government. The relative high cost of rendering administrative and primary sanitary services to small and scattered communities is the chief difficulty to be overcome, and the amalgamation of these scattered communities under one local governing authority may prove to provide the best workable arrangement for the time being to a satisfactory solution of the problems involved, as more efficient staff, plant, and organisation would be possible under one management than would be the case should a number of small badly financed authorities attempt to deal with the situation.

The extension of the boundaries of Nairobi Township so as to include the major portion of these scattered settlements would probably provide the ideal solution of the problems involved, but it appears unlikely that the Nairobi Municipality would be prepared to undertake any added responsibilities at present in the shape of any extension of their Township boundaries, neither is it probable that public opinion in the scattered settlements would consider favourably any suggestion of this character.

Similar problems have arisen in connection with all or most of the small and growing townships throughout the Colony and it is probable that new legislation in the form of a comprehensive Local Government Ordinance, providing adequate powers and machinery for the rating of the inhabitants of urban and suburban areas not yet ripe for municipal government, will be necessary before satisfactory and efficient administration, development and control can be effected in these small townships and the scattered settlements on the outskirts of Nairobi Township.

4. After giving consideration to certain matters connected with a proposed extension of the boundaries of Eldoret Township, the Board recommended to the Hon. Commissioner of Lands, that the question of the extension of the boundaries of Eldoret Township be treated as a matter of urgency and recommended further that, in accordance with the terms of a recommendation made during the year 1923, all proposed side passages between plots in the Bazaar Extension be eliminated.

5. During the previous year (1923) the Board addressed Government asking if Government would be prepared to agree to the principle that equitable mortgage be accepted instead of surety in any cases where security for a Bond might be required by the Board.

Although no information has as yet been received by the Board that any decision has been arrived at on this matter by Government, the Board has been notified that the Hon. Attorney General has advised Government that he does not think it would be advisable to agree to such a proposal on the grounds that equitable mortgage can only be accepted where there is an existing debt; and further, should difficulty arise about satisfactory surety, in his opinion, the best means to guarantee performance of an applicant's obligations in connection with the sub-division of a property would be to hand over the title deeds to the Board until the scheme is completed.

6. In the course of its deliberations during the year the Board has adhered to the decision arrived at during the year 1922, that Sanitary Lanes should not be asked for in residential areas where plots equalled one or more acres in extent.

7. In accordance with the terms of the resolution adopted by the Board during the year 1922, copies of all plans of proposed sub-divisions submitted to the Board have been forwarded to the local authority, Resident Commissioner or District Commissioner concerned with a request for their recommendations.

As a result of this procedure the Board has been favoured with many helpful recommendations and criticisms, and very useful local information bearing upon proposed sub-divisional schemes has been supplied on several occasions.

JOHN L. GILKS,

President.

APPENDIX "B".

ANNUAL REPORT OF THE PROCEEDINGS OF THE CENTRAL BOARD OF HEALTH FOR THE YEAR 1924.

(THE PUBLIC HEALTH ORDINANCE, 1921).

---

1. *Members of the Board, Resignations, New Appointments*:—

(a) The membership of the Board consisted of:—

The Principal Medical Officer, J. L. Gilks, Esq., M.R.C.S. (England, L.R.C.P. (Lond.), F.R.C.S. (Edin.), (Chairman).
The Chief Sanitation Officer, A. R. Paterson, Esq., M.B., Ch.B. (Glasg.), D.P.H. (Camb.), D.T.M. & H. (Camb).
G. V. W. Anderson, Esq., M.B., B.S. (Lond.), F.R.C.S. (Eng).
W. H. Kauntze, Esq., M.B.E., M.B., B.S. (Lond.) M.D., D.P.H. (Vict.).
Lt Col. O. F. Watkins, C.B.E., D.S.O., M.A. (Oxon).
J. A. Watson, Esq., W.S.
The Hon. Mr. T. A.Wood, M.B.E., C.M.G., M.L.C.
H. L. Sikes, Esq., B.A., B.E., M.Inst. C.E., F.G.S.
A. J. Jex-Blake, Esq., M.A., M.D. (Oxon), F.R.C.P. (Lond.).
F. Strawbridge, Esq., Secretary.

(b) There were no changes in membership of the Board during the year.

(c) Three members of the Board were absent overseas during a considerable portion of the year.

2. *Meetings of the Board.*—Five meetings of the Board were held during the year.

3. *Regulations Submitted to Board for Confirmation.*—The following Regulations were submitted to the Board for approval and confirmation in accordance with the provisions of Section 16 of the Ordinance:—

(a) *Regulations Governing the Density of Buildings.*

These Regulations had been submitted to the Board by the Nairobi Corporation during the latter portion of the year 1923, but had been referred back for the further consideration of the Corporation in the light of certain amendments suggested by the Board.

The Regulations were resubmitted in the early portion of the year 1924, and were approved and confirmed by the Board. They were subsequently approved by Government and published in the Official Gazette under General Notice, No. 247, dated the 12th March, 1924.

(b) *Regulations Governing the use of Building Materials.*

Regulations providing that only brick, stone or concrete should be used in the construction of new buildings in the Commercial Area of Nairobi were submitted to the Board by the Nairobi Corporation.

The Board were unable to approve of the Regulations as submitted on the grounds that the provisions were much too comprehensive and should only apply to scheduled streets; that they should be made applicable to other streets as and when warranted by the progress of the town and for the present they should be confined to as few streets as possible pending the town-planning of the area. The Regulations were referred back to the Nairobi Corporation for further consideration in the light of the objections raised by the Board.

The Regulations were subsequently resubmitted by the Nairobi Corporation after being so amended as to give effect to the Board's recommendations and were then approved and confirmed by the Board. They were subsequently approved by Government and published in the Official Gazette under General Notice, No. 1019, dated the 13th November, 1924.

(c) *Regulations of Residence in Kisumu Township.*

Regulations were submitted to the Board by the Kisumu Local Authority providing that:—

(1) From the date of the publication of the Regulations no new building should be erected for the purposes of combined business and residence.

(2) On and after the 1st April, 1929, no premises in the Old Bazaar should be used for any purpose other than business and that residence therein should be discontinued.

(3) On and after the 1st April, 1929, no premises in Kisumu Township should be used for the combined purposes of business and residence.

The Board were unable to approve of the Regulations as submitted, but at the close of the year the subject matter of these Regulations was still under consideration by the Board.

4. *Town-planning of Factory Sites in Nairobi Township.*—The Board has given consideration to the subject of the replanning of the offensive and inoffensive factory sites in Nairobi Township as conditions appeared to be unsatisfactory. A lengthy correspondence on this subject, extending over a number of years, had taken place between Government and the Nairobi Corporation, but nothing had been done. In view of the increased development in the town the problem tended to become acute. As comparatively few buildings had been erected on the sites early action was desirable. In the original planning of the area insufficient consideration had been given to amenity, convenience or public health. The layout was situated on more or less level ground rendering it difficult to provide drainage and sewerage except at considerable expense, and no accessary roads had been provided for the loading and unloading of carts which also added to the difficulty of providing for the removal of refuse and nightsoil.

A tentative scheme for the replanning of the area was submitted by the Medical Officer of Health, Nairobi, for consideration by the Board.

After giving full consideration to this matter the following resolution was adopted by the Board:—

Resolution No. 44 adopted by the Board and forwarded to the Colonial Secretary as a Recommendation to Government:—

"That the attention of Government be called to the unsatisfactory planning of the offensive and inoffensive Factory Sites in Nairobi, and that with regard to the replanning of this area, the Board recommend to Government the tentative proposals of the Medical Officer of Health, Nairobi, for the general layout of the site subject to further consideration of detail."

5. *Townplanning of Eastleigh.*—During the course of the year the Board has

given consideration to a communication submitted to the Board by the Senior Commissioner, Ukamba Province, recommending that a scheme for the Town-planning of Eastleigh, (a township adjoining the Nairobi Township) which had been proposed by the Superintendent of Nairobi Suburban Areas, be considered by the Board.

The Superintendent of Nairobi Suburban Areas attended a meeting of the Board and outlined his suggestions for the Townplanning of Eastleigh. The Superintendent stated that the scheme put forward was merely a tentative one to provoke discussion, his main object being to obtain the Board's approval of the principle of a townplanning scheme for this area. He stressed the need for all proposals to conform to a regional townplanning scheme; the proximity of Eastleigh to Nairobi Township and its probable absorption by the latter township in the future; and the interest to Nairobi of any road schemes projected in such a closely adjoining township as Eastleigh. Details as to size of plots, width of streets, open spaces, and reservations for public purposes could be considered in detail after the principle of a scheme had been approved. He also called attention to the excellent opportunity which at present presented itself of obtaining the necessary land at a very low price. Recently there had been a very heavy fall in land values in Eastleigh and a large estate, comprising a large proportion of township plots and recently gone into bankruptcy, could be purchased on exceptionally favourable terms. It would be much easier to acquire these plots from a bankrupt estate than to deal with a large number of different owners in the future.

After full consideration of the project the following resolution was adopted by the Board:—

Resolution No. 45, adopted by the Board and forwarded to the Colonial Secretary as a Recommendation to Government:—

> "That the Board considers that the re-planning of Eastleigh Township is a necessary and urgent matter and draws the attention of Government, to the scheme prepared by the Superintendent of Suburban Areas. The Board further points out to Government that the present is a most opportune moment to obtain favourable terms provided the matter is arranged in an expeditious and confidential manner."

It is of interest to record that Government subsequently acquired a considerable interest in land in Eastleigh Township thus paving the way to a successful issue with regard to the future townplanning of this area.

6. *Representations by Nakuru Local Authority re. Insanitary Condition of Njoro Bazaar.*—The Board has given consideration to certain representations made by the Nakuru Local Authority that the Njoro Bazaar is in an insanitary state, that it is situated in too close proximity to the Post Office and Railway Station, and is a source of danger to the surrounding population: that seeing that it has been temporarily closed due to the number of Plague cases which have occurred therein, action be taken with a view to permanently closing the existing insanitary bazaar and effecting its reconstruction on the new site reserved in the Township of Njoro for that purpose, and which is well removed from the Railway Station and Post Office.

A report was also submitted to the Board by the Medical Officer of Health, Nairobi. The report stated that the Medical Officer of Health had inspected a number of the farms in the Nakuru and Njoro districts, and the Indian Bazaars. At all these places the sanitation could only be described as most unsatisfactory and until an improvement took place it would be quite impossible to control Plague or any other disease in the district. He was of opinion that it was entirely a matter of adequate sanitary staff and that if a proper staff could be procured it would be a comparatively easy matter to control sanitation in the townships and districts. As the Nakuru and Njoro districts were large grain producing areas the control of Plague was a matter of some importance. He also pointed out that the insanitary conditions were not confined to the Nakuru and Njoro districts, but were general throughout the country and he considered that the time had now arrived when Government should insist on better sanitation more especially with regard to the housing of labour on European farms. Referring to the representations made by the Nakuru Local Authority he suggested that the Njoro Bazaar should not be moved until proper sanitary control of the area could be exercised.

After full consideration of the matters at issue the Board decided that the Nakuru Local Authority be informed that the Board, whilst fully appreciating the insanitary state of the Bazaar and the general situation as regards Plague in the Njoro district, is of opinion that it would be inadvisable to recommend the removal of the Bazaar to a new site at present. Until sanitary staff is available to exercise proper control of building construction in the township similar nuisances are liable to arise on the new site. That the Board also considers that it would be unreasonable to enforce the erection of a more permanent type of building until greater security of tenure is granted than that of a temporary occupation license; and further, that the provision of sanitary staff for the Nakuru and Njoro districts is receiving consideration by Government, that it is hoped that such staff will be available in the near future, and that when staff is available the whole question will be reconsidered.

7. *Statement by the Principal Medical Officer on the situation with regard to Plague in the Colony and Protectorate.*—During the course of the year the Principal Medical Officer made a general statement to the Board with regard to the Plague situation in the Colony and Protectorate. He stated that the present position was most unsatisfactory, outbreaks of Plague having occurred at Nakuru, Naivasha, Solai, Njoro, Londiani and Kikuyu Reserves where the disease was endemic. The production and export of grain was increasing rapidly. Railway construction was opening up new areas of the country and with the development of the deep water pier at Kilindini it was anticipated that there would be a large export of grain. As the prosperity of the Colony was intimately connected with the grain trade it was of the utmost importance to take every precaution to prevent the spread of Plague to ships and from ships to other parts of the world. The spread of the disease in this manner was liable to increase freights and reduce trading facilities with other countries. During the past year alone serious outbreaks of Plague had occurred in Nairobi and Mombasa, in the latter town the Customs sheds at Kilindini being specially affected. When the deep water pier at Kilindini was opened there was a distinct danger of rats getting on board the ships and thus infecting them with Plague.

8. *Representations from Nairobi Corporation with regard to the slaughtering of animals outside the township area.*—The Board has given consideration to certain representations submitted by the Nairobi Corporation that animals were being slaughtered just outside their township boundaries. It was submitted that meat from animals so slaughtered, not being subject to their township Byelaws, could be sold either on the spot for use in Nairobi or for consignment to up country stations, and that an opening for the spread of disease resulted. It was suggested that need existed for special regulations to cope with the situation.

At the request of the Principal Medical Officer the Medical Officer of Health, Nairobi, submitted a report which stated that only a very limited number of animals were slaughtered just outside the Nairobi township boundaries and that, in his opinion, only a very small amount of meat from such sources found its way into Nairobi. The Nairobi township byelaws prohibited meat being sold in Nairobi unless and until it had been inspected and passed by the Corporation staff. With regard to animals being slaughtered and the meat sold outside townships up and down the country without being inspected and approved, he submitted that neither adequate staff nor facilities existed at present for dealing with the situation and in face of the present finances of the Colony he could not see how the problem could be tackled for some time to come.

After giving full consideration to this matter the Board decided that the Nairobi Corporation be informed that whilst the Board would like to see provision for a greater amount of meat inspection it did not appear possible to provide for such at the present moment.

9. *Growing of Cinchona by Government.*—During the course of its deliberations the Board has given consideration to the project of the growing of Cinchona by Government. The Principal Medical Officer reported that he had again discussed this matter with the Conservator of Forests. A further experiment was to be made, a previous experiment having failed, and efforts were now being made to obtain seed.

JOHN L. GILKS,
Chairman.

F. STRAWBRIDGE,
Secretary.

APPENDIX "C".

IDENTIFICATION OF CULICIDAE, FROM MOMBASA, KENYA COLONY.

DIPTERA.

CULICIDAE:

Anopheles costalis, Theo.
Culex fatigans, Wied.
Culex nebulosus, Theo.
Culex duttoni, Theo.
Culex albiventris, Edw.
Aedes (Stegomyia) simpsoni, Theo.
Aedes (Stegomyia) argenteus, Poiret.
Aedes (Finlays) fulgens, Edw.
Lutzia tigripes, Grp.
Megarhinus brevipalpis, Theo.
Eretmopodites chrysogaster, Grah.

COLONY AND PROTECTORATE OF KENYA.

THE ANNUAL REPORT

OF THE

MEDICAL RESEARCH LABORATORY

FOR THE YEAR 1924.

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ANNUAL REPORT
OF THE
MEDICAL RESEARCH LABORATORY, NAIROBI.
FOR THE YEAR ENDING 31st DECEMBER, 1924.

ADMINISTRATION.

On January 1st, the laboratory staff was increased by the addition of one Government Analyst and one Chemical Officer. These two officers were taken on from the Chemical Research Department which ceased to exist as a Department on 31st December, 1923.

During the year an entomologist was appointed, but had not arrived in Kenya on 31st December.

On 15th December, a youth from the European School was appointed for training as a laboratory assistant.

The laboratory staff now consists of the following:—

EUROPEAN.

Bacteriologists.	3
Government Analyst.	1
Chemical Officer.	1
Entomologist.	1
Laboratory Assistant.	1
Typist and Librarian.	1
Laboratory Learner.	1

ASIATIC.

Laboratory Assistants.	2
Clerk, Accountant and Storekeeper.	1

AFRICAN.

Laboratory Learners (variable)	2, 3, or 4
Gas Plant attendant.	1
Refringerating plant and Cold Store.	2
Calf boy.	1
Animal boy.	1
Laboratory boys.	8

Dr. G. V. Allen, Second Assistant, Bacteriologist, returned from leave on 13th May.

Dr. W. H. Kauntze, Senior Bacteriologist, left for England on 15th, June.

Thus although there are three bacteriologists on the staff only two were actually working in the laboratory during the year.

TRAINING OF ASSISTANTS.

As already stated, a European youth has commenced his course of training as a laboratory assistant. This is in the nature of an experiment and no comments can be made on it as he did not take up his duties until nearly the end of the year.

The attempt to train Africans has not been an unqualified success. Six partly-educated Africans have been tried during the year of whom four were found wanting. Two were Arabs from Mombasa. These were the best educated and most intelligent of the six, but unfortunately were also lazy and untrustworthy. They are no longer with us. Of the two natives still on the staff one is a Kavirondo and one an Embu. They are both trustworthy boys though slow, and they can do simple routine technique such as stock subcultures, staining of slides, setting up of apparatus, differential leucocyte counts, identification of malarial parasites and entamoebae under supervision, &c. Such boys have a distinct field of usefulness, but are not easily obtained.

It is to be feared that until Government training centres for Africans are established, where the native will be given a thorough training in the use of his mind and kept under strict discipline, the type which the Medical Department requires will not be obtained. The necessity for strict discipline in the training of the African is often not realized. Certain codes of behaviour are thrust on the European child from the day it is born. Further rules of conduct are enforced at school, and in adult years by the conventions of civilized society. The African native has none of these advantages. There is no home or social influence tending towards the formation of character and such influence must therefore be supplied by the Government if the African people are to become self-reliant citizens. These ideas are by no means new or revolutionary. When the African Native Medical Corps was formed in Uganda the necessity for discipline was soon seen. Their O. C., Major Keane, D.S.O., says "It was realized that beyond imparting technical knowledge, it was highly important to teach discipline and conduct. Many fail to appreciate how little the average African knows of obedience. Discipline in the home hardly exists with. ....Recruits were ignorant of the meaning of simple obedience as the English schoolboy understands it" "Barrack square training was made a primary feature of the depot course of instruction in order that habits of obedience, punctuality, promptness and smartness might be inculcated. ....Not only did rapid improvement in bearing and physique result, but alertness, both of mind and body, was developed."

The perennial grumble about the laboratory premises comes forward once more. The hot, ill-ventilated, badly situated, inconvenient building about which so many complaints have been made, is still the home of medical research in Kenya. From it are turned out many thousands of doses annually of plague vaccine, calf lymph, and sodium potassium bismuth tartrate; and all the clinical routine, public health work and medico-legal work for the Colony are done there. There is little doubt, but that the chronic ill health from which most of the European workers in the laboratory suffer, is due to the vitiated atmosphere in which they work, combined with the mental anxiety brought about by the necessity for manufacturing materials for inoculation, in surroundings under which the manufacture of foodstuffs would not be allowed at home.

LIBRARY.

The majority of books in the library are out of date. It is essential that a sum of money be obtained next year for the acquisition of modern works of reference in all departments of medicine. This is the only medical library in the Colony and it must be kept up-to-date, otherwise it should be abolished.

During the year all the books have been classified and catalogued.

All the periodicals received in the laboratory are regularly bound and placed on the library shelves. A catalogue of these bound volumes has been prepared, but is not ready for issue yet.

GENERAL CHARACTER OF WORK DONE DURING THE YEAR.

Though called the Medical Research Laboratory this does not give quite a correct impression of the work of the division. The work is mainly clinical routine examinations. It is sincerely to be hoped that in the near future, staff and premises will be obtained that will enable the division to live up to its name.

If the opinion of medical men in the Colony were asked it would be found that the laboratory occupies a very valuable place in the medical organisation. At home the clinical laboratory is a valuable aid to the clinician, but in the Tropics it is an essential. Research and Routine are complementary. A good clinical laboratory gives the direction to research workers, and the research section assists the routine on problems with which they are unable to cope.

It may be justly claimed that the routine side of the laboratory is as efficient as it can well be. Much valuable spade work has been done since the war. Many methods of carrying out the various examinations and tests in common use have been tried so that the most suitable might be retained. Sources of error and fallacies have been persistently traced and dealt with. It was also realized that though the technical work might be flawless and 100% correct, it was useless if there was a chance of confusion in the reception of specimens. Great care was therefore given to the office organisation and now we can claim that specimens are received, registered, examined, reports made and recorded and results despatched in a minimum of time and with maximum accuracy.

Blood films again top the list of routine examinations, and the number of differential leucocyte counts reached the large figure of over 2,000. An analysis of these is beyond the scope of an Annual Report. It entails a vast amount of labour, but ought to be of interest as giving some indication of the value of a blood count taken by the average man and examined as a routine in the course of general work. It would be of even greater interest were an Arneth count also made as a routine, and if possible this will be done during 1925.

Portions of morbid tissue for histological examination again increased in number. The following table shows this.

NUMBER OF PORTIONS OF TISSUE RECEIVED FOR HISTOLOGICAL EXAMINATION.

1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.
4	8	11	9	15	16	6	25	35	65	184

The discovery that the Klebs-Leoffler bacillus was present in Kenya brought more work in its train. Two strains were isolated and careful tests of their virulence carried out. This is dealt with more fully elsewhere.

Towards the end of the year the examination of fæces for protozoa, particularly Entamoeba histolytica, was placed on a sounder basis. For some time doubt had been felt as to whether all the diagnoses of entamoebae and cysts were accurate. Hitherto only fresh cover slip preparations of faeces had been made. In these, diagnoses of typical amoebae and cysts presented no difficulty, but in the case of more degenerated specimens identification was by no means easy.

In an endeavour to establish a diagnosis, preparations were made and stained by either Heidenhain's Iron Haematoxylin or by Chlorocarmine. As a result it has been found that many of the bodies which had been previously held to be degenerated amoebae or cysts were actually degenerated phagocytic body cells.

In the light of this experience the figures returned for presence of amoebae and cysts in this and former reports must be accepted with reserve.

Agglutinations are still a source of worry. Various methods both macroscopic and microscopic have been tried. Cultures have been obtained from the Oxford Laboratories and the test carried out by Dreyer's method; standard agglutinable cultures have been made from strains of typhoid obtained locally; great care has been taken with the culture medium, cultures have been obtained from single colonies and their agglutinability compared in order to select the most suitable, yet most of the sera received are negative. Whether this is due to delayed formation of agglutinins in the blood, or to mistaken diagnoses, we are not yet in a position to say.

In addition to the clinical routine there is what may be called a manufacturing side to the laboratory. During the year 124,000 doses of plague vaccine, 224,480 doses of Sodium—Potassium—Bismuth—Tartarate for the treatment of yaws and 122,514 doses of calf lymph were made.

REPORT OF THE ROUTINE DIVISION.

(a) CLINICAL LABORATORY SECTION.

(1) *Blood Examinations.*

A Differential Leucocyte count was made on 2341 blood films. In 343 of these films parasites were observed. An analysis of the figure obtained is beyond the scope of an Annual Report, but it is hoped to investigate them carefully during the coming year.

Malaria. Parasites were observed in 378 blood films, an increase of 126 over the large number of slides received from some Railway Construction Hospitals.

As in former years (excluding war years) the subtertian type predominated.

Subtertian.	308	= 81.2%
Benign tertian	47	= 12.4%
Quartan.	19	= 5%
Benign tertian and subtertian	2	
Subtertian and quartan.	1	

Cresents were found in 23 slides.
One film from Kisumu showed tenue forms of parasites.

Relapsing Fever. Spironema rossi was found in 47 films. The distribution of this parasite is now fairly widesprtad in the Colony and as Central Kavirondo appears to be affected, it will probably continue spreading to parts where it was formerly unknown.

(2) *The Enteric Group.*

The number of sera received which agglutinated organisms of the typho-coli group is larger than ever before. This may be due to real increase in the number of enteric cases, or to a certain amount of success in our efforts to obtain highly agglutinable cultures.

Medical Officers in charge of native hospitals say there are a large number of cases of clinical typhoid amongst natives, yet most of the sera received in the laboratory are negative. Dr. Allen is trying to collect clinical records of cases, agglutination results (the test being carried out by two methods) and, when a death takes place, post mortem cultures and sections. When a sufficient number of such records have been obtained, some light may be thrown on our difficulty.

In sending out results of agglutinations the titre to which it agglutinates an organisms is given without comment. The clinician is expected to use this result in conjunction with his clinical observation to arrive at a diagnosis. We do not yet know what is a diagnostic titre and the titre varies so much according to the sensitiveness of the cultures and the method used.

The following are some of Dr. Allen's findings.

B. TYPHOSUS.

Dreyer''s method.	Garrow's method.
1/1,000 tr.	1/40 slight.
1/60	1/10
1/500	1/40
Neg.	1/80
Neg.	1/20

The emulsions used in doing these agglutinations were comparable, being made from a single highly-agglutinable colony and all possible controls were used.

It is still difficult to persuade practitioners to send blood for culture early in the disease.

(3) *Dysentery.*

Protozoal. Some remarks on the subject of amoebae have already been made.

A stool from a patient at Machakos showed a very heavy infection with Giardia intestinalis, 150 to 200 flagellates in every field. This patient suffered from dysentery which slowly improved as the Giardia disappeared. No other organisms could be found.

Bacillary. Although a large number of stools were cultured, bacilli were only found in two cases. From one an organism of the Flexner type was isolated, and from the other an organism resembling B. dysenteriae Morgan.

Unclassified. There remains a large residue of cases of diarrhoea with blood and mucus from which no pathogenic organism can be isolated and in which no protozoa can be found. These yield to simple saline treatment. It is doubtful if they are true dysentery.

(4) *Undulant Fever.*

Cases of this disease still crop up. There is little difficulty in diagnosis as the patient's serum agglutinates the M. melitensis or paramelitensis to a high titre—a striking contrast to the state of affairs with the Enteric group.

Some work should be done on the relationship between undulant fever and B. abortis Bang in Kenya, but it is not possible with our present buildings and staff to undertake further work.

(5) *Diphtheria.*

In the Uganda Laboratory Report for 1923, Dr. Duke remarked on the presence of a non-virulent bacillus of diphtheria in that country. During 1924, both a virulent and a non-virulent strain of the Klebs-Loeffler bacillus were found in Kenya. The virulent strain was isolated from a typical clinical case of diphtheria in a European child. The non-virulent strain was obtained from a typical case of clinical diphtheria in a European adult. Virulent Klebs-Loeffler bacilli have never before been found in Kenya.

The two strains appear to be culturally and morphologically indentical, the only difference being in their virulence.

We are gradually acquiring all the European infectious diseases in addition to those peculiar to the tropics, thus increasing the burden on the shoulders of the local medical man. Whether diphtheria will be modified by conditions in this country, time alone will tell. At present we have to take it seriously and be prepared for any contingency.

(6) *Helminthic Infections.*

Single Infections.

Ova of Taenia	were found in 34 cases	=	4.6% of faeces examined.
,, ,, Ankylostoma	,, ,, ,, 15 ,,	=	2.0% ,, ,, ,,
,, ,, Ascaris	,, ,, ,, 9 ,,	=	1.2% ,, ,, ,,
,, ,, Trichuris	,, ,, ,, 7 ,,	=	0.95% ,, ,,
,, ,, Strongyloides	,, ,, ,, 7 ,,	=	0.95% ,, ,,

Ova of Schistosoma Mansoni and of Hymenolepis were each found in only one sample of the 731 received.

Double Infections.

Ankylostoma and Trichuris.	in 4 cases	=	0.54%
,, ,, Taenia	,, 6 ,,	=	0.82%
,, ,, Ascaris.	,, 1 ,,	=	0.13%
Ascaris and Taenia.	,, 2 ,,	=	0.27%
,, ,, Trichuris.	,, 1 ,,	=	0.13%
Taenia and Trichuris.	,, 1 ,,	=	0.13%
,, ,, Strongyloides.	,, 1 ,,	=	0.13%

Triple Infections.

Trichuris, Ascaris and Taenia	1 ,,	=	0.13%
,, ,, ,, Ankylostoma.	1 ,,	=	0.13%

Quadruple Infections.

S. Mansoni, Ankylostoma, Strongyloides and Ova unknown, 1.

Combined Helminthic and Protozoal Infections.

Double Infections.

Cysts (var?) and Taenia.	5 cases	=	0.66%	faeces.
,, ,, ,, Ankylostoma	1 ,,	=	0.49%	,,
E. Histolytica cysts and Ankylostoma	1 ,,	=	0.13%	,,
,, ,, ,, Taenia	2 ,,	=	0.27%	,,
E. Coli cysts and Ankylostoma.	1 ,,	=	0.13%	,,
,, ,, ,, Trichuris.	2 ,,	=	0.27%	,,
I. butschlii cysts and Taenia.	1 ,,	=	0.13%	,,
Free Entamoebae (sp.?) and Taenia.	1 ,,	=	0.13%	,,
,, ,, histolytica & Trichuris.	1 ,,	=	0.13%	,,
,, ,, histolytica & Ankylostoma.	1 ,,	=	0.13%	,,
Trichomonas and Trichuris	2 ,,	=	0.27%	,,
,, ,, Taenia.	1 ,,	=	0.13%	,,

Triple Infections.

Taenia, Ankylostoma and Cysts (var.?)	4 cases	=	0.54%
,, ,, ,, E. coli cysts.	1 ,,	=	0.13%
,, Ascaris ,, ,, ,,	1 ,,	=	0.13%
Trichuris, Ascaris ,, ,, ,,	1 ,,	=	0.13%
,, Ankylostoma ,, ,, ,,	1 ,,	=	0.13%

Quadruple Infections.

Taenia, Ascaris, Trichuris and (?) cysts	1 ,,	=	0.13%

Considering the findings as a whole it will be seen that Taenia occurred in 61 samples, Ankylostoma in 39, Trichuris in 21, Ascaris 18, Strongyloides 9, Schistosoma 2 and Hymenolepis 1.

A helminthic survey of Kenya should be undertaken. If every Medical Officer examined only one faeces daily a large amount of useful information on the distribution of helminths would soon be obtained.

(7) *The Wassermann Reaction.*

This test was performed on 326 samples of blood. Of these 173 were positive (i.e. + : + ± : + +) and 31 gave a doubtful result.

The technique in use was the same as in former years.

(b) MEDICO LEGAL SECTION.

There is nothing of interest to report under this section.

(c) PATHOLOGICAL SECTION.

There were 184 human specimens and 14 animal received for examination. This branch of the work shows a steady increase. Of great interest is the increasing number of malignant tumours from natives, almost all from natives untouched by civilization living a primitive life in the native reserves. Such observations are of value in view of recent statements both in England and America that "cancer" is a disease of civilization, brought about by modern food and that it is unknown in primitive tribes. Certainly in the past very little malignant disease has been reported among primitives, but is this not due to the scant medical attention they receive? The increase in the number of malignant tumours in the last few years in Kenya is marked and coincides with the opening of hospitals and dispensaries in the native reserves and the increased interest taken in the medical welfare of the native.

The following table shows this increase:—

Year.	Malignant specimens received in laboratory.
1914.	nil.
1915.	nil.
1916.	nil.
1917.	nil.
1918.	one case.
1919.	one case.
1920.	nil.
1921.	nil.
1922.	5
1923.	5
1924.	17

These 17 specimens include a gland from the neck showing metastatic carcinoma, epithelioma, squamous-celled carcinoma of neck, carcinoma stomach, carcinoma larynx, encephaloid carcinoma of the breast, metastatic carcinoma of liver, lympho-sarcoma kidney, metastatic sarcoma, spindle-celled sarcoma, large spindle and giant-celled sarcoma, large round-celled sarcoma, fibro-sarcoma and granuloma inguinale.

Among the benign tumours received were, mixed tumour of the parotid, hydatid cyst taken from back of thigh, fibroma, adeno-fibroma, teratoma, myomata and fibromyomata uteri, myxoma breast, papilloma, lipomata. Three specimens of enlarged glands showed Hodgkins disease, there were 4 cases of lymphatic leukaemia and one of Lupus.

All these were from native sources.

Six malignant specimens were received from Europeans. With all this material the beginning of a museum has been made and as time permits, specimens of all these are mounted and preserved.

Post Mortem Examinations. It has been possible to give more attention to this important branch of pathology. All organs are weighed and records kept of every case.

(d) PUBLIC HEALTH SECTION.

1. *Water Examinations.* Periodic examinations of the Nairobi Water Supply were not made during 1924, but a final examination of the springs in the bottom of the Kikuyu Reservoir was made in January.

A series of examination on alleged pollution of streams by sisal factories was carried out and a number of samples of mineral water reported on.

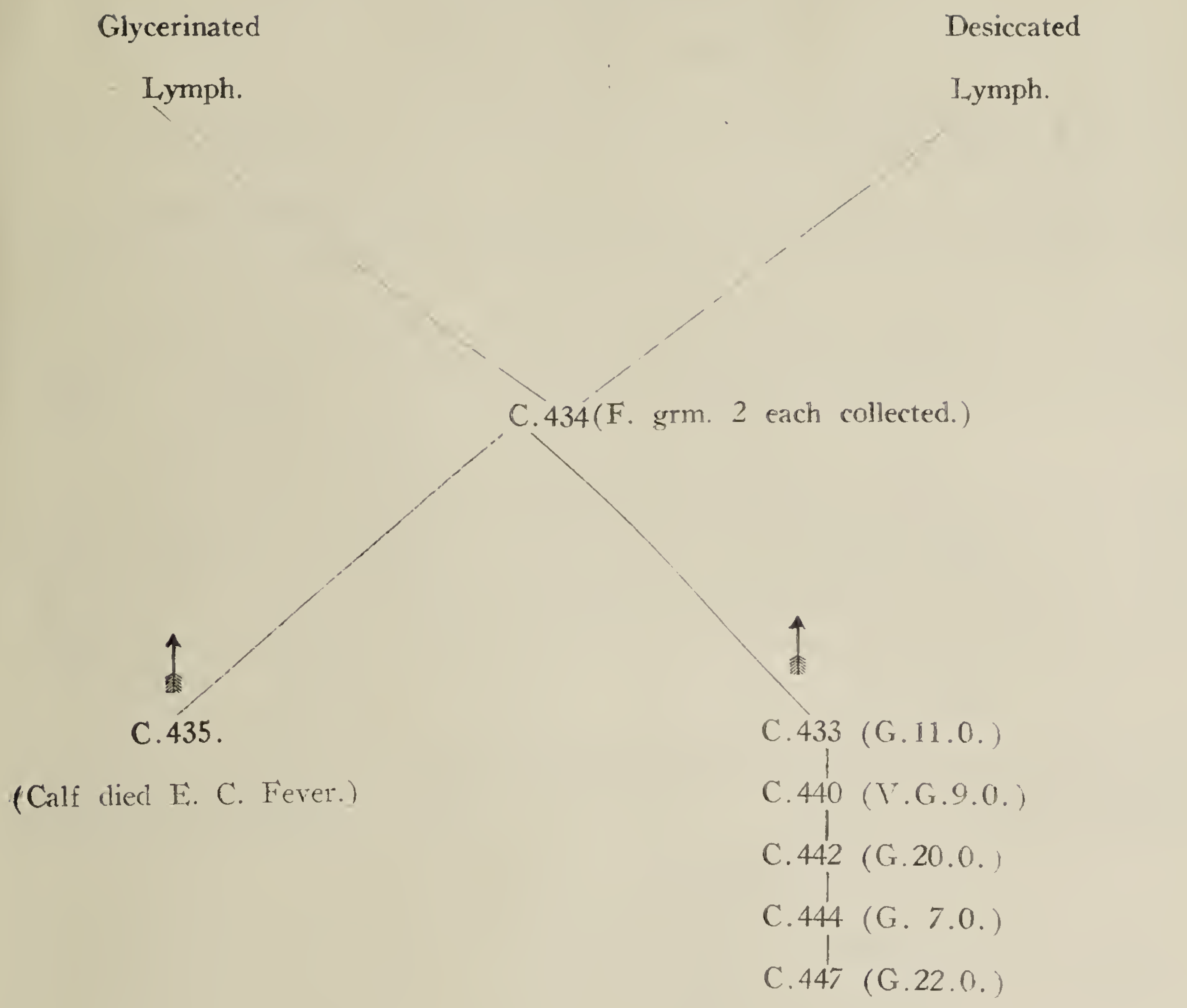
2. *Milk Examinations.* Very few samples of milk were examined bacteriologically.

(e) VACCINE LYMPH SECTION.

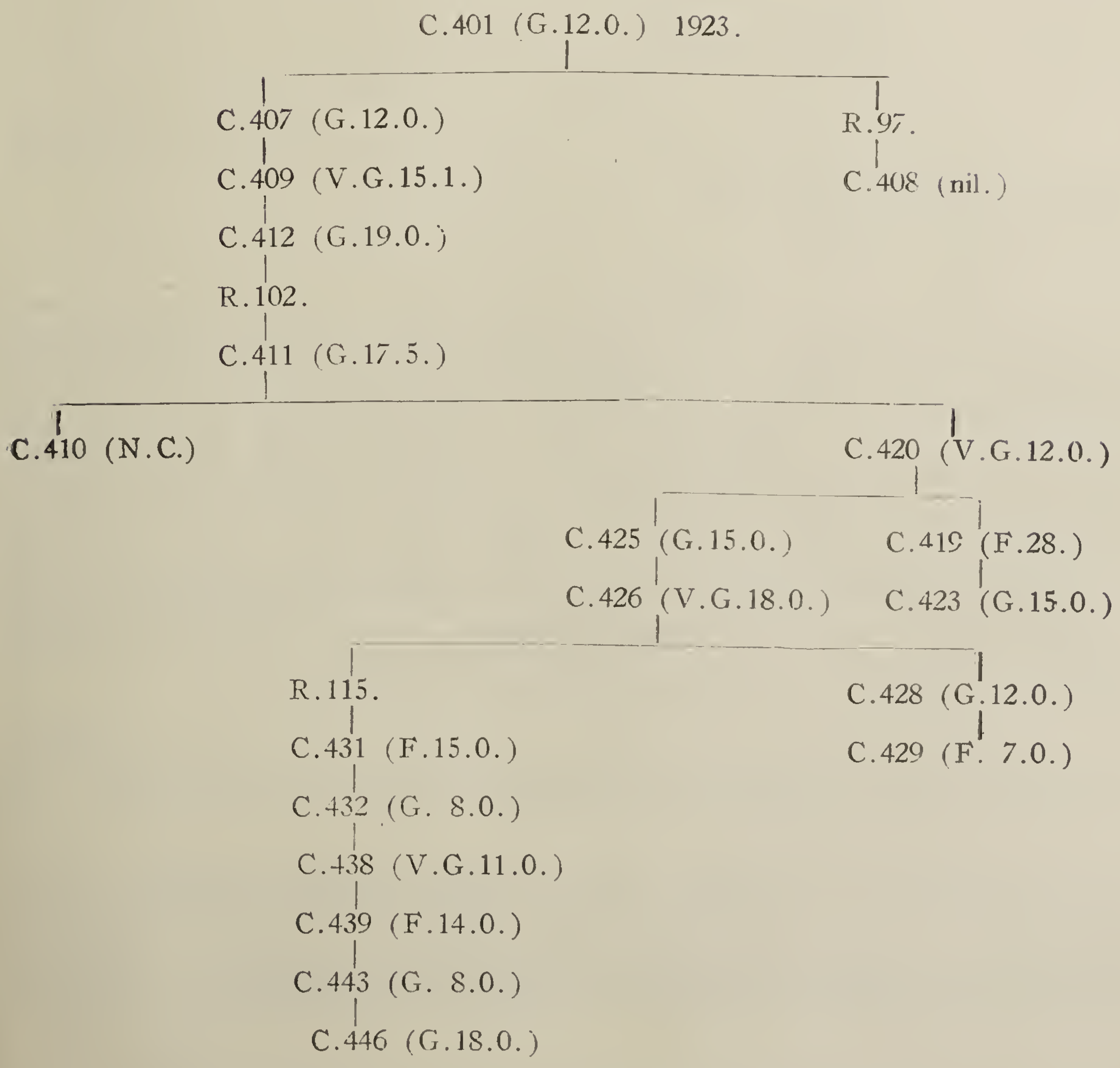
The genealogical trees of the various strains of lymph are carried on from former years. It will be seen that the Z strain and the B strain are continued with good results. A new strain from South Africa was introduced. This was received from the Government Vaccine Institute at Rosebank near Cape Town and is very satisfactory.

No alterations have been made in technique during the year. The lymph produced has been of good quality and the vaccination results satisfactory. The improvements introduced during the past three years are now bearing fruit and this, together with the erection of a cold storage plant, has resulted in a reduction in the cost of lymph issued from 4.36d. per dose to 0.32d. per dose (see appendix II). Vaccination results from various stations are shown in appendix III.

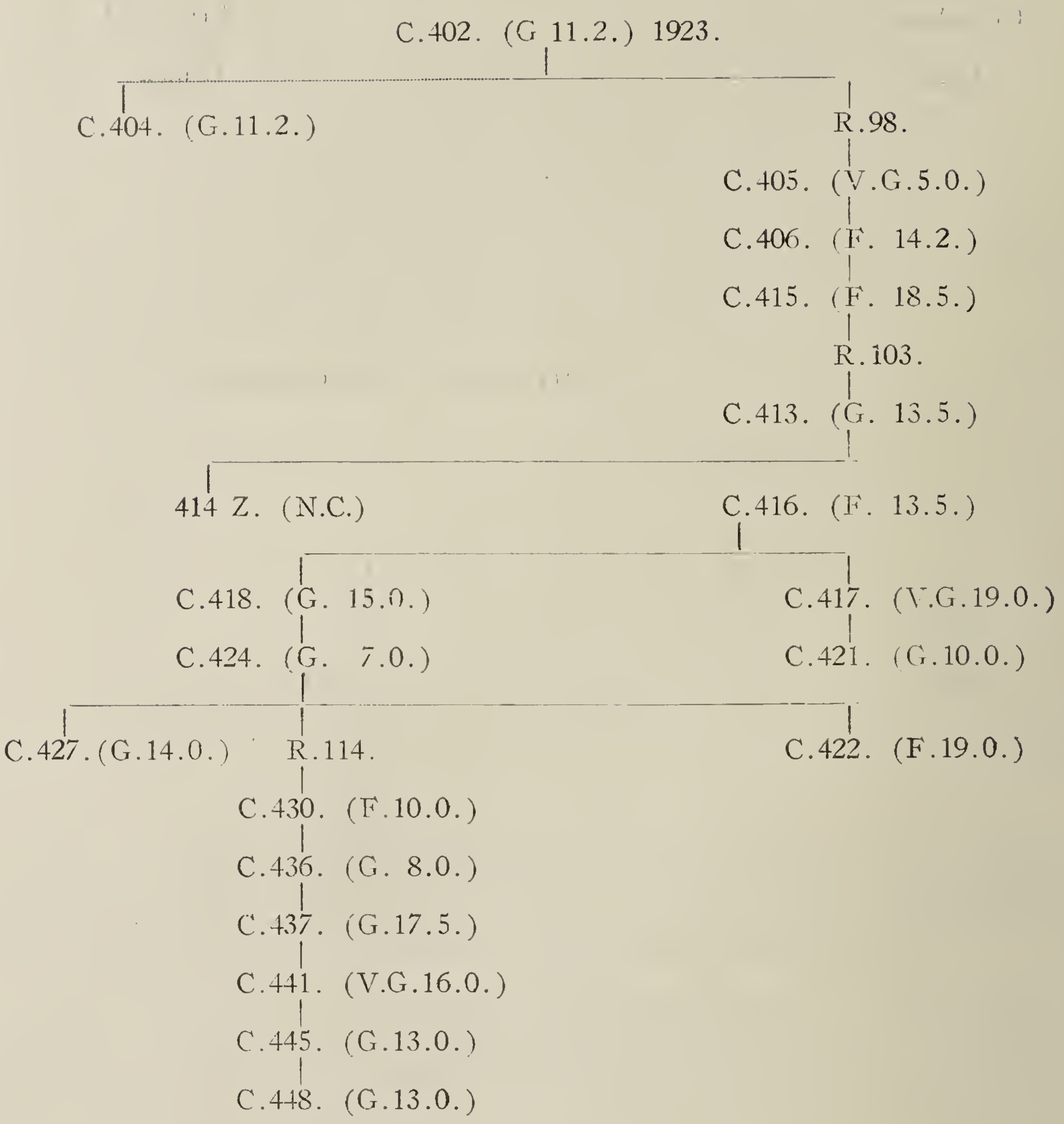
S. A. STRAIN.



"B" STRAIN, 1924.



"Z" STRAIN, 1924..



The wastage of lymph is excessive. During the year 122,514 doses were issued, but only 35,767 vaccinations done.

(f) VACCINE SECTION.

1. *Plague Vaccine.* 124,000 doses of plague vaccine were made during the year. The technique detailed in last year's report has been retained except for an improvement in the method of filling. There is always a risk of contamination of the vaccine during the process of filling. To obviate this, the vaccine bottles and caps are first sterilized and when cool dropped into a dish of 1 in 40 carbolic solution. The vaccine in a large glass container is placed on a shelf. A brass clip holding two spinal needles placed vertically close together, is fastened in a burette stand with a heavily weighted base. One of the needles is connected to a vaccum pump actuated by the water tap, and the other to the vaccine container. A rubber capped vaccine bottle is picked out of the carbolic bath and impaled on the two needles so that they penetrate the cap about ¼″ whereupon the bottle fills rapidly. There is no need to cut off the flow of vaccine while removing one bottle and replacing by another as very little is lost by a quick operator. The bottles when filled are dipped in the gelatine solution described last year. This effectively seals the two holes made by the needles.

A further sterility test is now undertaken before issue. 10% of the filled bottles are set aside and from each, 0.5 c.c. is drawn with a sterile hypodermic syringe. This is tested for sterility aerobically and anaerobically.

2. *Staphylococcal Vaccine.* The use of a stock mixed Staphylococcus aureus and S. albus vaccine, prepared by Dreyer's method, has been continued throughout the year. It has proved much superior to the old autogenous suspensions. I myself have observed and followed a number of cases of furunculosis treated with this defatted vaccine and found the results very satisfactory. The vaccine can be recommended with confidence.

REPORT OF THE BIO-CHEMIST.

By Mr. R. W. R. Miller.

The work during the first four months of 1924, was hampered considerably by structural alterations to that part of the building used by the chemists.

The chief activities of the Bio-chemist were devoted to the manufacture of Potassium—sodium—bismuth—tartarate, 135,480 doses of which were supplied to the Medical Store and a reserve of 89,000 doses built up.

The effect of varying doses of our own and a similar body prepared in England were studied on rabbits and while it appeared that the local product is less toxic no reliance can be placed on work of this nature until a systematic study has been made of the gain and loss in weight suffered by normal rabbits in captivity.

During the year precipitated Bismuth was prepared by treating Bismuth oxide with caustic soda and glucose and this preparation when suspended in 50% glucose proved painless in administration, if slightly slower in its remedial action. Some 1,400 doses were issued to the Native Civil Hospital. As great care must be taken to shake the preparation to avoid a too high proportion of Bismuth in those doses taken from the bottom of the bottle it would appear doubtful if this drug could be used with uniformity by an unqualified staff.

Certain tentative work was done in conjunction with Dr. P. A. Clearkin on the estimation of Calcium in the blood. A certain amount of time was spent in preparing reagents for determining hydrogen ion concentration, preservation of specimens, opacity standards of bacteria, etc., etc.

Appended is a table of results of routine analysis.

Milks Human, Six.	Fat %	Solids not Fat %	Total Solids %
	2.2	—	—
	0.95	8.68	9.63
	3.59	8.67	12.26
	2.80	9.01	11.81
	3.4	8.65	12.05
	3.4	8.29	11.69
Normal (Bunge).	3.4	8.1	11.5

Urea in urine. Four.	% urea.
	0.27
	1.40
	2.10
	1.64
Normal (Halliburton).	2.33

Urine for Sugar. Three.	% sugar.
	nil.
	0.41
	0.95

Stomach contents. Two.	% free acid.
	0.0[illegible]
	0.02
Normal.	(0.15)

Faeces for occult blood. Two. One negative.
One positive.

R. W. Coefficient. Two. (1) Black septol 1/400 equivalent 1/90 carbolic acid.
(2) White septoi slightly stronger than (1).

REPORT OF THE ANALYTICAL CHEMISTRY DIVISION.

By Mr. W. Colet Birch.

Note.

Difficulties have attended the carrying on of the work of the Government Analyst during 1924.

Owing to the structural alterations in the building, for the space of some two months it was not possible to attempt more than a few types of chemical operation.

The re-organisation of the Chemical Services of the country necessitated the setting up of what is, in effect, an entirely new chemical laboratory—a task of some magnitude.

Further the Government Analyst has had no semi-skilled assistance to help in routine analyses and his activities have therefore, of necessity, been restricted.

1. GENERAL ANALYTICAL WORK.

(a) MILK.

Three hundred and sixty six samples of ordinary milk and ten samples of condensed milk and milk preparations were analysed during the year.

Of these the majority originated with the Medical Officer of Health. Nairobi, (355) who submits almost weekly eight samples taken from hawkers in Nairobi township. The data obtained from the whole 366 samples may be classified thus.

	No. of Samples.	No. adulerated with water.	% adulterated.	Average % of added water in adulterated samples.
January.	30	8	26.7	10.4
February.	22	2	9.1	12.5
March.	42	8	19.1	16.8
April.	17	3	17.7	35.0
May.	40	4	10.0	9.3
June.	34	2	5.9	12.5
July.	20	6	30.0	9.5
August.	41	13	31.7	9.6
September.	24	5	20.8	13.6
October.	38	9	23.7	22.4
November.	34	7	20.6	19.7
December.	24	8	33.3	20.4
	366	75	20.5	18.0

The maximum amount of added water found in any sample was 84%!

A comparison of these figures with those of the previous years shows that although approximately one and a half times as many samples were analysed in 1924, as in 1923, yet the percentage adulterated with water has only diminished from 21% to 20.5%.

The fact appears to show that this method of protection against fraud has reached the limit of its efficacy and that a further and very large increase in the number of samples collected would result in only a small diminution in the percentage adulterated, a diminution quite out of proportion to the labour and expense involved.

It must not, however, be supposed that the systematic taking of samples is of no value because the record for 1923 shows a 50% drop in the percentage of samples adulterated in comparison with 1922.

It seems clear that those timid in this form of fraud have learnt their lesson, but that there remains a certain number whose propensities will best be curbed by the application of methods other than that of sample taking in the streets.

However, many samples are taken there is always a "sporting chance" of escaping detection and this chance will appeal to the native mind more than a similar chance in a community longer exposed to the influences of civilisation.

I consider that the present method of safeguarding the casual milk supply has reached its limit of efficacy.

The figures for previous years are of interest in this connection and are here appended.

Year.	No. of samples.	Percentage adulterated.
1912.	48	37.5
1913.	93	29
1914.	47	72
1915.	26	73
1916.	22	64
1917.	82	59.7
1918.	81	67.7
1919.	27	59.2
1920.	39	61.5
1921.	314	37
1922.	345	43.7
1923.	243	21
1924.	366	20.5

This discussion refers exclusively to the casual milk hawker. The available evidence goes to show that household supplies from recognised dairies are satisfactory.

Of the 366 samples analysed during the year, 257 may be considered as milk of whose normality there is no doubt and the data relating to them are of interest as indicating the quality of milk from native cows which the consumer can reasonably expect to demand.

These figures follow .

	Normal samples.	Av. Sp. gravity.	Av. Total Solids %	Av. Fat %	Av. Solids not fat %
January.	20	1.0324	13.83	4.64	9.19
February.	16	328	13.77	4.53	9.24
March.	34	328	13.75	4.50	9.25
April.	14	339	13.80	4.30	9.50
May.	33	339	14.36	4.78	9.57
June.	31	338	14.20	4.67	9.50
July.	5	331	14.18	4.80	9.38
August.	22	325	14.05	4.82	9.24
September.	18	324	13.77	4.62	9.16
October.	25	327	13.84	4.58	9.25
November.	25	325	13.93	4.72	9.20
December.	14	340	14.22	4.64	9.58
	257	1.0331	13.98	4.63	9.34

During the years 1923, and onwards very numerous analyses of special samples of milk were made with a view to ascertaining the composition of milk in this country.

At that time the number of pure bred beasts in Kenya was not sufficient to have much influence on the composition of the general milk supply drawn, as it was, largely from "native" cattle. With the grading up of stock that is taking place the necessity arises of discovering whether the milk of a better class of animal differs essentially from that of native cattle.

This is an important matter if legal limits for any constituent of milk come eventually to be fixed.

Towards the end of the year a start was made towards the elucidation of this problem as regards the pure bred Friesland. Capt. Pirie of Limoru has been good enough to help by supplying guaranteed milk.

The analyses are not yet sufficiently numerous to warrant discussion and the figures are held over for the future.

Analysis of the samples of condensed milk was required under Proclamation No. 19 of the Customs Ordinance, 1910. Of the eight samples submitted four contained less than the legal limit of fat.

(b) WATER.

Classification of Samples:—

Sanitary..	Nairobi Water Supply.	53
	Miscellaneous.	26
	Metallic contamination	13
	Pollution of rivers by sisal waste.	10
Industrial and Mineralogical.	.. ..	12

Nairobi Water Supply.

Nairobi water as it reaches the laboratory taps has been analysed monthly except during February and March when building operations in the laboratory rendered work of this nature impossible.

The figures appear in the appendix and as they are very similar to those obtained in previous years call for little comment.

No evidence of contamination has been revealed by chemical analysis.

In a supply of this kind, where the storage reservoir is not very many times larger than the water drawn daily from it, small variations in the figures which represent experimental results are bound to occur, but it is remarkable that these figures show so little variation with the seasons.

The only definite variation is shown by the "nitrate" determination which falls from January to August and then rises again till December, but even this is not well marked..

While the reservoir at Kikuyu was empty for cleaning purposes an attempt was made to obtain direct evidence as to whether the water which feeds the springs in the bed of the reservoir was derived by percolation from the swamp at Kikuyu. The lie of the land suggests this as the swamp is at a slightly higher elevation than the reservoir.

The use of fluorescein was first suggested, but this was abandoned partly owing to the cost and also because should the experiment have been too successful the whole of the town supply might have been coloured for a time.

The much less delicate method with ordinary salt was therefore adopted.

Five holes were cut through the vegetation overlaying the water of the swamp approximately opposite the reservoir and in each of these two cwt. of coarse salt was placed at 12 o'clock noon.

The water from springs I, II and III was analysed at 11 a.m., before the salt was added, and afterwards at two-hourly intervals till 2 p.m. on the next day.

In the case of springs I and II no evidence whatever was obtained of a rise in the chlorides in the water.

Spring III, however, showed during the period between 14 and 18 hours after the salt was placed in the swamp a minute increase of the chlorine in the water.

This increase was from 4.88 to 5.24 parts per 100,000 and provides a certain amount of evidence to support what is suggested by the lie of the land. I do not suggest, however, that the evidence is conclusive.

In addition to the ordinary sanitary analyses a complete analysis of the mineral constituents of Nairobi water has been made. This was required in connection with experiments on the corrosive properties of the water on galvanised iron pipes. The figures are given below.

Miscellaneous.

These call for no comment. They include samples taken by the Public Works Department as proposed water supplies for new townships, various other "official" samples and a few for private individuals. The figures appear in the appendix.

Metallic contamination.

Nine samples of soda water and water used in its preparation were examined for metallic contamination, copper and lead.

In five of these nothing injurious was detected. The remaining four contained both copper and lead, the figures lying between .08 and .22 grains per gallon for copper and between a trace and .06 grains per gallon for lead.

The remaining samples included water from a painted galvanised iron roof and from standpipes for contamination with zinc.

The former contained no lead, but large quantities of zinc and iron were present and it was also markedly acid in reaction. It is probable that the water had been collected for use too soon after painting.

Zinc is a normal constituent of Nairobi water. Some factors governing its solution from zinc lined pipes are discussed below.

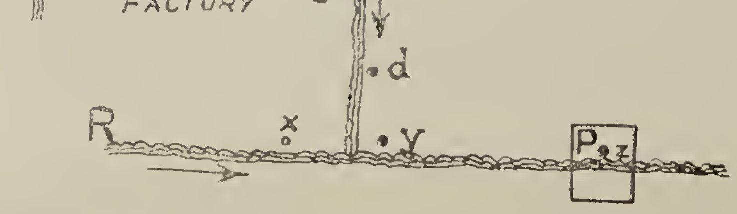
River pollution by Sisal waste.

Considerable attention has been given to this matter during the year and one special case of suspected pollution has been examined in great detail. The question for elucidation was whether the entry of a small stream S into a large river R caused the water of R to be unfit for domestic use when it reached a point P lower down stream.

Numerous analyses were made and some of the figures obtained are of sufficient interest for record.

The question was complicated somewhat by the fact that the water for sisal washing did not come originally from the stream S but had a completely separate origin (a).

Analyses were made of the water from points marked on the diagram a, b, c, d, x, y, and z. The results follow.



ANALYSES OF WATER POINTS MARKED W. X, Y, Z; A, B, C, D, E, ON DIAGRAM, IN PARTS PER 100,000.

	W.	X.	Y.	Z.	A.	B.	C.	D.	E.
Nitrogen as saline ammonia. ..	.0008	trace	.0004	.0028	trace.	trace	.15	.17	.55
Nitrogen as albuminoid ammonia. ..	.0012	.0028	.0220	.0218	.0052	trace	1.11	.17	.17
Oxygen absorbed, 3 hrs. lab. temp. ..	.06	.06	.26	.37	.05	nil	18.2	3.0	3.5
Solid residue.	15.4	15.7	26.5	23.3	16.8	9.5	305.0	90.3	90.0
Solid residue, loss on ignition. ..	4.4	6.0	11.1	9.3	5.1	2.1	188.9	38.7	43.4
Whether residue chars on heating. ..	very slight	none.	slight.	marked.	slight	none	much	much	much

Samples collected on July 30th, C.E.W.X.Z.

Samples collected on Aug. 22nd, A, B. D. Y.

In considering these figures the following must be kept in mind.

1. Decaying vegetable matter in a water yields as a final product more albuminoid ammonia than free ammonia.
2. An excess of free ammonia over albuminoid ammonia indicates probability of contamination by organic matter of animal origin.
3. The "oxygen absorbed" figure indicates the presence of readily oxidisable organic matter without necessarily indicating its origin. Taken in conjunction with the figures for the ammonias its origin may in certain cases be inferred.
4. The "solid residue" gives an indication of the total amount of matter organic and inorganic in solution or fine suspension in the water. The change of its appearance during ignition and the change of its weight may give an indication of its composition. For example charring and a smell of burning certainly indicate the presence of organic matter.
5. The figures for a water analysis must be considered together. It is generally unsafe to draw any conclusion from one item alone.

To the water from point X no exception can be taken on chemical grounds. At point Y about 150 yards below the point of entrance of the small stream bearing the sisal effluent, the figure for albuminoid ammonia is 7.9 times greater than at X, the oxygen absorbed is 4.3 times as great, the solid residue 1.7 times and the loss on ignition 1.9 times. Similarly the figures at Z are greater than those at X by the following amounts.

Albuminoid ammonia	7.8 times.
Oxygen absorbed.	6.2 ,,
Solid residue.	1.4 ,,
Loss on ignition.	1.6 ,,

Chemical analysis indicates therefore in a very definite fashion that the water at points Y & Z is polluted in comparison with the water at X. The change in the more obvious characteristics of the river R after it had become mixed with the sisal effluent was most marked. Before this it was comparatively clear, bearing only little vegetable debris. After admixture the bed of the stream becomes foul in places with a leprous looking vegetable growth, the water contains considerable quantities of vegetable debris, has a most uninviting appearance and at Z a faint unpleasant odour.

Examination of the water at A and B showed that this change could not have been caused by the water from these points, that from B being nearly organically pure. The water from C and D containing the sisal washings was foul smelling to a degree and the figures for C are greater than those for A by the following amounts.

Albuminoid ammonia	213 times.
Oxygen absorbed	364 ,,
Solid residue.	18 ,,
Loss on ignition	37 ,,

There remained one further question to be considered, namely whether the water at points X and Z is suitable for a domestic supply.

This requires to be dealt with on lines somewhat different from those which would be taken in a European country.

Water is scarce in parts of East Africa and even bad or doubtful water is better than none at all.

The question resolves itself into whether the water at these two points is reasonably fit for use when suitably treated in a manner which can be applied in any farmstead. For practical purposes boiling is the only method of treatment.

It may be taken as a general rule that any river in this country along whose banks natives live or which is used by natives must be regarded as dangerous to drink unboiled and this whatever the chemical analysis may be.

Even a water to which chemically it is difficult to take exception may be shown to be doubtful or dangerous when examined bacteriologically.

The Nairobi water supply with which it is difficult to find fault chemically is a case in point.

The water at X bears no chemical evidence of pollution and with the proviso that drinking water should be boiled would form a satisfactory domestic supply.

The water at Z, with an unpleasant odour, an "oxygen absorbed" figure of .37, a solid residue which chars with an odour of burning on heating and with much dead and decaying vegetable matter to form a pabulum for micro-organisms cannot be regarded as satisfactory for domestic use, even when boiled.

Industrial and Mineralogical.
Twelve samples which fall under this head was examined.

Of these, five were feed waters for boilers and in most cases complete analyses were made either to allow data to be sent to Europe to assist makers of water softening plant to supply the requisite machinery or to give advice on treatment to be given locally.

One sample was examined as to its suitability for sisal washing and the remaining samples consisted of waters from Lakes Naivasha, Narasha, Kelele and Kessima, Raguti springs and Nairobi tap water and of these mineral analyses were made.

The water of Lake Naivasha was examined for the purpose of estimating the possibility of success attendant on any attempt to stock the lake with fish.

The water is of course alkaline. The alkalinity expressed in terms of soda is sodium carbonate 4.2 parts and sodium bicarbonate 16.8 parts per 100,000. Chlorides are remarkably low 1 part per 100,000 and sulphates are absent except in traces.

Lake Narasha is also alkaline in character. 36 parts of sodium carbonate per 100,000.

The water from Raguti springs, in its natural condition effervescent, is not highly mineralised containing only six parts solid matter per 100,000. It has only 1° of temporary hardness and 3.4° of permanent hardness i.e., chlorides and sulphates of lime and magnesia.

Other data under this head appear in the appendix.

(c) FOODS AND LIQUORS.

Samples of the native beer brewed by the Municipality have been submitted regularly.

The percentage of alcohol by volume has varied from a minimum of .6% to a maximum of 3.9%, the average being 2.4%. It can not therefore be regarded as a highly intoxicating beverage.

Two analyses were made of Native Beer brewed from "Jaggery" at Kitui.

Both "brews" were made at the same time and in the same way with the exception that one was made in a new gourd and the other in a gourd that has been used before.

The percentage of alcohol by volume in the former was 2.97% that in the latter 6.86%.

The yeasts adhering to the old gourd, no doubt, gave a quicker start to the process of fermentation.

In considering the question of the effect of native fermented liquors on the consumers there is another point besides the alcoholic content that must be borne in mind. Liquor from grain as drunk by natives is a thin gruel containing a very considerable amount of solid digestible matter. Liquor from sugar may if the fermentation has been allowed to proceed far enough contain little digestible matter.

Broadly speaking therefore the intoxicating effects of a given quantity of alcohol in the two types of liquor are the effects of this alcohol taken fasting or during the process of a meal.

These are the effects that require comparison in assessing the properties of native liquors and it seems at any rate probable that the proportionate intoxicating effects of liquor brewed from sugar may be considerably greater than the greater proportion of alcohol seems to warrant.

One sample of an imported beer was examined. This had given rise to unpleasant symptoms and it was thought that large amounts of preservative might have been present accidentally.

Benzoic acid was found, but not in excessive amounts and the conclusion was arrived at that the beer had not the keeping qualities requisite in an export beer, but had merely gone "bad". The taste was of itself sufficient warning of this.

Six samples of maize meal were examined. Two were condemned as unfit for food, one being mouldy and one so afflicted with maggots, and their "webs" that it had almost lost the appearance of an article of food.

One other sample could only be classed as "doubtful" owing to its bitter after-taste. This taste points to maize which has been kept a long time. Natives object to this intensely and there seems to be some evidence that old maize though apparently sound has developed properties which cause digestive disturbances.

One sample of beans was examined. Eighty two per cent. of this sample was riddled by weevils, the beans being for the most part shells only.

Of two samples of rice one was satisfactory and one though of poor quality contained 13.5% by weight of small stones, surely an excessive allowance.

Thirteen samples of alcoholic liquor were examined under the Native Liquor Ordinance.

(d) TOXICOLOGY.

Substances supposed poisonous or specimens investigated in cases of poisoning or suspected poisoning number fifty two.

Of these seven referred to veterinary matters and the remainder to human cases. Twenty of these examinations resulted in positive results. Twenty other miscellaneous samples were also examined including six native "medicines".

The cause of death of three rats was investigated and in each rat traces of Barium carbonate (.001 to .01 gm.) were found. The cause of death was therefore poison not plague.

A Barium carbonate rat poison was found to consist of meal 42.7%, Barium carbonate 52.8% and 4.5% of insoluble matter.

Some "jaggery" and cooked mealie meal of a brilliant green colour the appearance of which had caused the native who purchased them considerable mystification were found to contain the artificial dye known as "Malachite Green". Enquiry at the "duka" where they had been bought elicited the fact that its proprietor dealt in dyes of this nature and some Malachite Green was found amongst his stock. Its presence in the meal was obviously due to an accident.

Information was required in a case of suspected murder as to the similarity or otherwise of an axle grease, a greasy stain on a coat and a substance found amongst the grass. Analysis showed the axle grease to be compounded of a lime soap and a light mineral oil while the stain on the coat had been produced by a dark coloured heavy mineral oil mixed with which there was no lime soap, further the substance found amongst the grass contained a little oily matter, but this was saponifiable and therefore not a mineral oil and in addition no lime was present.

The three substances were therefore of an entirely different nature and had no relation to each other.

One sample of vegetable soup was examined for powdered glass, but the sandy residue found in it was consistent with the use of insufficiently washed vegetables. Microscopic examination in polarised light showed that the colourless transparent particles in the residue had a crystalline structure and were not glass.

One plant examined for poisonous properties was a species of Melothria allied to colocynth. Though bitter extracts were obtained from it which gave reactions characteristic of alkaloids it could not be regarded as poisonous as comparatively speaking immense doses administered to a guinea pig produced no evil results.

One vegetable powder with a pleasant aromatic odour proved to be used as a scent by the Kikuyu women. It was not "Indian hemp" (Cannabis) as was suggested by the description sent with it of the symptoms it was supposed to produce.

One case of suspected poisoning though of interest is held over for discussion as the matter has not yet been brought to a conclusion. It has already involved the investigation of twenty two samples during a period of several months.

In a case of accidental human poisoning attended with fatal results 43.8 mgms. of strychnine were isolated from the organs examined.

A white powder the consumption of which had been attended with serious results proved to be oxalic acid.

Some mealie meal which had caused the death of a dog was found to contain three fifths of a grain of strychnine per pound.

Facilities for investigating native "medicines" and possible poisons are in an unsatisfactory state. In most of the cases that have come up for investigation only minute amounts of material are available and the evidence that illness or death has resulted from the use of these medicines is often of a somewhat vague nature. Although there is little doubt that many of them depend for their effects on the power of suggestion or superstition yet it must be remembered that the flora of the country is, even in a botanical sense, only partially explored while chemically it is a "terra incognita."

(e) MINERALS AND METALS.

Eighteen assays for gold and two assays of gold bullion were carried out. These samples could easily have been multiplied ten fold had there been the necessary staff to cope with the work. The gold ores originated in the Lolgorien fields and neighbourhood and it is regretable that more of this type of work could not be undertaken. There is no consulting chemist in private practice in Nairobi by whom work of this nature can be carried out and prospectors were therefore forced to send their samples out of the country for assay. Had it been possible to handle this work promptly much useless endeavour and waste of money might have been saved the community.

Sixteen mineralogical specimens were also examined for private individuals.

(f) MISCELLANEOUS.

Timber for moisture	23
Vanilla essence.	1
Shampoo preparation	1
Charcoal.	1
Burnt lime	7
Fuel oils.	8
Disinfectants.	2
Chemicals for identification	3
Paint.	1
Xylol.	1
Carbon tetrachloride	1
Fossil.	1
Rat hair.	1
Deposit from water pipe.	1
Powder used in Kavirondo method of inoculation for small pox.	1
Lichen for dye properties.	1
Boiler scale	1
Alcoholic liquors	13

The determinations of moisture in wood were carried out as a check on timber supplied on contract. The figures are quoted in the appendix and form an interesting commentary on the troubles which beset those who require seasoned timber in this country.

The Vanilla essence and Shampoo preparation were analysed with regard to their content of alcohol on behalf of importers who had suspected an overcharged import duty.

The charcoal proved to be charred wood of recent origin and afforded no indication of the hoped for coal mine.

The samples of lime were examined in connection with the placing of contracts for this article. The percentage of lime varied from a minimum of 11.9% to a maximum of 76.7% and these figures afford an illustration of the value attendant on the control of cost for raw materials by analysis.

The fuel oils are samples of bulk consignments to Kenya. The co-efficient of expansion with temperature is required in order to allow the weight of issues from storage tanks to be readily calculated from the volume at any temperature.

The red paint was destined for use on roofs. It is advisable that there should be no lead in a composition of this nature if the water collected from the roofs is to be used as a domestic supply. The sample was satisfactory in this respect. It contains no lead and the colouring matter was an oxide of iron.

The xylol which was intended for use as a reagent in the making of microscopic preparations was found to contain nearly two gms. per 100 c.c. of a substance having the appearance of collodion. This rendered it useless for its purpose, but simple distillation remedied the matter. The contamination of the consignment was no doubt accidental.

Carbon tetrachloride when used as a drug is required to be practically free from compounds of sulphur. The sample contained .015 gms. of carbon disulphide per 100 c.c.

The fosil might from its general appearance have been either a bone or a portion of a tree. Chemical analysis showed that it contained only a minute trace of phosphate. It was therefore probably the latter.

The lemon yellow colour on a museum specimen of a rat was so similar to the stain produced by picric acid that it was thought that the hair might have been accidentally stained during the preparation of the specimen. Analysis showed the colour which is peculiar to a particular species of rat to be natural and not a picric acid stain.

A water pipe taken from a kitchen stove was brought to the laboratory for examination. It was completely choked with a soft white deposit. This deposit was found to consist nearly entirely of zinc carbonate.

The reason for its presence is as follows; Nairobi water unfortunately dissolves with great ease a certain amount of zinc from any pipe through which it passes that is galvanised on the inside. The zinc is held in solution as the carbonate by the carbonic acid which is present in the water. On warming, this carbonic acid is expelled and the zinc carbonate is precipitated.

In the present case the zinc dissolved from the service pipes had been deposited in the heater pipe in the kitchen stove and in course of time stopped it completely.

The faint iridiscent film frequently seen on the surface of Nairobi water allowed to stand exposed to the air and the white opalescence or deposit also of frequent occurrence is due to zinc and not as is often assumed to lime.

A powder said to be used by the Kavirondo in their method of inoculation for small pox is of interest.

Much secrecy attends the manufacture of this powder, but it is said that the ash from part of a plant is mixed with powdered material from another part of the same plant. This powder is then mixed with the matter from a small pox pustule and, practically speaking, vaccinations are then carried out with this. It is said that nothing but a mild form of the disease ever results.

Microscopic examination of the powder showed nothing of interest except a few pieces of vegetable tissue of a pink colour. An extract weighing 3.2 mgms. (.28%) was obtained which was intensely bitter in taste and gave the general reactions characteristic of alkaloids.

The reaction with Fröhdés reagent which is characteristic of morphine was also obtained, but further tests for this alkaloid failed. Only minute amounts were available for examination and there was only sufficient to establish the presence of an alkaloid, but not to identify it.

It would be an interesting matter if a strain of disease producing bacteria could have their virulence attenuated suddenly by an almost toxic dose of a vegetable poison as appears to be indicated in this case.

The Lichen comes from the Lamu district. In 1922, a dye was extracted from a specimen from the same district which had the properties of the class of dye known as "Archil". It is interesting to know that this sample when sent to England resulted in an offer of £20 a ton for an experimental consignment and that 6½ tons have been sent. The present sample was of the same nature and yielded a dye which coloured wool a rich maroon colour, "fast" to washing and very satisfactorily "fast" to sunlight even in this country.

2. NOTE ON THE SOLUBILITY OF ZINC IN NAIROBI WATER.

An attempt has been made to define the conditions under which zinc is taken up by Nairobi water, but this has had to be abandoned before completion owing to pressure of routine work.

Through a new water pipe 10 ft. long and 1½ inch in diameter, "galvanised" inside and out, a stream of water was allowed to flow at a measured rate and the zinc determined in the water after its passage through the pipe with the following results.

Flow of water through pipe.	Zinc (metal) in parts per 100,000 found in the water after passing through pipe.
2000 c.c. in 2 min.	.03
2000 c.c. in 2½ min.	.08
2000 c.c. in 4½ min.	.07
after water had stood in tube out of contact with air for ½ hour.	.4
1 ,,	1.0
1½ ,,	1.0
2¾ ,,	1.8
4 ,,	2.4
21½ ,,	2.5
71 ,,	2.5

The water was perfectly clear when drawn from the tube, but when air was allowed access to the tube the water after 48 hours contact was milky and contained 4.5 parts of zinc per 100,000.

To determine the rate of solution of zinc in presence of air the pipe was laid horizontally partly filled with water and air was aspirated continuously over the surface of the water in the tube.

Time.	Zinc (metal) in parts per 100,000 in the water.
3 hours.	2
22 ,,	2.5
44½ ,,	5
92½ ,,	5

There appears to be no doubt that the solution of the zinc is occasioned at least partly by the carbon dioxide dissolved in the water. The quickness with which the zinc is taken up is remarkable.

The carbon dioxide was removed by adding increasing amounts of lime and the effect noted.

Lime added, parts per 100,000.	Time in hrs. of contact of water with pipe.	Zinc taken up in parts metal per 100,000.
5	1	.1
	3	.4
	22	.8
10	1	less than .04
	4	.3
	22	.4
	73	1.2
15	2	less than .02
	24	.3
20	3½	traces.
	22	traces.
	48	traces.

When air was admitted to the tube filled with water which had been treated with 20 parts of lime per 100,000, three parts of zinc were taken up in 24 hours.

It will be seen that solution of zinc can be prevented by the removal of the free carbon dioxide.

The addition of 10 parts of lime per 100,000 would mean for a daily consumption of half a million gallons of water the use of 500 lbs. of lime per 24 hours. This would be precipitated in the water as carbonate of lime weighing nearly 1,000 lbs. or about 13 tons a month a quantity which, if admitted to the mains at the source, would probably soon block them.

Special plant for treating and filtering the water would therefore be necessary if this method were applied and its cost would be comparable with that of relaying the pipes which have a "galvanised" coating.

APPENDIX I.

BACTERIOLOGICAL DIVISION.

SUMMARY OF RESULTS OF ALL LABORATORY EXAMINATIONS & PREPARATIONS, 1924.

GRAND TOTAL OF ALL EXAMINATIONS 7,757.

		MAN																					CATTLE			DOG						RAT	SHEEP	Guinea Pig	OTHER EXAMINATIONS								
		Blood.	Cerebro-Spinal Fluid.	Exudate from Knee-Joint.	Exudate from Liver.	Exudate from Lung.	Exudate from Lymphatic Gland	Exudate from Kidney.	Exudate from Pleura.	Exudate from Spleen.	Exudate from Ulcers.	Faeces.	Fluid from Jaw Tumour.	Nasal Secretion.	Pharyngeal Secretion.	Pus.	Cyst.	Sputum.	Urethral Vaginal and Prostatic Secretion.	Urine.	Various Tissues.	Milk.	Blood.	Exudate from Spleen.	Various Tissues.	Blood.	Faeces.	Exudate from Spleen.	Urine.	Ulcer.	Various Tissues.	Exudate from Spleen.	Urethral Secretion.	Various Tissues.	Blood Stains.	Spermatozoa.	Helminths.	Insecta.	Maize Flour.	Milk Supplies.	Mineral Waters.	Water Supplies.	Post Mortem Examinations.
	Total Specimens Submitted.	2819	38	10	9	17	103	1	1	54	50	731	1	20	107	54	1	393	127	198	184	5	1	1	3	11	1	1	1	1	9	2520	1	2	21	12	1	1	1	4	9	23	22
	Differential Leucocyte Counts.	1998																																									
	Enumeration of Erythrocytes & Leucocytes	2																																									
PARASITES detected by MORPHOLOGY or STAINING REACTIONS.	T. Gambiense.						1																																				
	Entamoeba coli.											52																															
	Entamoeba histolytica.											79																															
	Giardia intestinalis.											20																															
	Blastocystis hominis.											1																															
	Iodamoeba butschlii.											7																															
	Endolimax nana.											2																															
	Entamoebae not identified.											111																															
	Piroplasma canis.																									7		1															
	Plasmodium falciparum.	307																																									
	Plasmodium Falciparum & P. vivax.	2																																									
	Plasmodium vivax.	47																																									
	Plasmodium vivax & P. tenue.	1																																									
	Parasite variety?	1																																									
	Plasmodium malariae.	19																																									
	Plasmodium malariae & Falciparum.	1																																									
	Spironema pertenue.										4																																
	Spironema rossi.	47																																									
	Spironema?															1																											
	Trichomonas intestinalis.											4																															
	Bacillus variety?	1				1				1	4																																
	Bacillus leprae.													4		3																											
	Bacillus pestis.	2			1	2	38	1		21					1			9														4											
	Pneumococcus.		3	1																																							
	Bacillus tuberculosis.																	35																									
	Gonococcus.																		32																								
	Spirilla and Fusiform bacilli.															1																											
	Staphylococcus.															6																											
	Streptococcus.						1																																				
	Meningococcus.		5																																								
	Ducrey's bacillus.										1																																
	Larvae strongyloides stercoralis.											7																															
	Ova Ancylostomidae.											15																															
	Ova Ascaris lumbricoides.											9																															
	Ova Hymenolepis (? Sp.)											1																															
	Ova Schistostoma haematobium																			2																							
	Ova Schistostoma mansoni.											1																															
	Ova Taenia saginata.											34																															
	Ova Trichiuris trichiura											7																															
	Ova Double infections.											16																															
	Ova Triple infections.											2																															
	Ova Quadruple infections.											1																															
	Protozoal & Helminth double infections.											23																															
	Protozoal & Helminth triple infections.											8																															
	Protozoal & Helminth quadruple „											1																															
	Taenia saginata.																																				1						
	Negative.	67	30	9	8	14	63	0	1	32	63	268	1	14	23	35	1	334	91				1	1		4	1			1		2516	1							1			
AGGLUTINATION TESTS.	Bacillus paratyphosus A.	4																																									
	Bacillus paratyphosus B.	2																																									
	Bacillus paratyphosus C.	0																																									
	Bacillus typhosus.	67																																									
	Bacillus proteus X 19.	6																																									
	Micrococcus melitensis.	9																																									
	Micrococcus paramelitensis.	5																																									
	Negative.	205																																									
CULTURAL EXAMINATIONS.	Bacillus coli.				1							35								8																							
	Bacillus dysenteriae flexner.											1																															
	Bacillus dysenteriae morgan.											1																															
	Bacillus typhosus.	4																																									
	Micrococcus catarrhalis.																	4																									
	Klebs Loeffler bacillus.														17																												
	Pneumococcus.																	1																									
	Staphylococcus.															3																											
	Streptococcus.																	1																									
	Negative.	24										90			64	3		7	4	6																							
	General Chemical & Microscopical Examination.											4								182	5								1										1				
	Medico Legal Examinations.																																		21	12							
	Complete Bacteriological Examination.																																							3	9	23	
WASSERMANN REACTION.	Positive Result.	173																																									
	Doubtful Positive Result.	31																																									
	Negative Result.	122																																									
	Histological Examination.																				184				3						9			2									

STOCK VACCINES PREPARED.

Gonococcus Vaccine	706	Doses.
Micrococcus Melitensis Vaccine	60	„
Bacillus Pestis Vaccine	124,380	„
Staphylococcus (Defatted)	1,140	„
T. A. B. Vaccine	224	„

AUTOGENOUS VACCINES PREPARED.

Bacillus Coli	38
For Furunculosis	3
„ Acne	1
„ Pyorrhoea	4
„ Catarrh	12

Appendix 11.

MEDICAL RESEARCH LABORATORY, NAIROBI.

SYNOPSIS OF CALF LYMPH PRODUCTION 1921—24.

	1921.	1922.	1923.	1924.
No. Calves vaccinated.	226	94	70	45
No. Calves vaccinated successfully.	91	68	57	41
Average yield per calf.				
(a) All calves.	4.3 gms.	11.9 gms.	10.5 gms.	12.3 gms.
(b) Successfully vaccinated calves.	12.8 gms.	16.3 gms.	12.8 gms.	13.5 gms.
No. doses manufactured.	223,300	224,542	146,380	111,000
No. doses issued.	83,271	101,595	135,062	122,514
Total expenditure.	£1,515.13.7.	£493.16.4.	£211.18.0.	£198.8.0.
Cost per dose.				
(a) Manufactured.	1.63d.	0.53d.	0.34d.	0.3d.
(b) Issued.	4.36d.	1.16d.	0.37d.	0.32d.

WATER
IN PARTS PER 100,000.

SOURCE.	Ammonia.		Nitrogen as.		Oxygen absorbed 3 hours. lab. temp.	Chlorine.	Hardness.			Total Solids.	REMARKS.
	Saline.	Albuminoid.	Nitrate.	Nitrite.			Total	Temp'y.	Permanent.		
Albert. Lake. 100 feet from shore.	.001	.012	nil	nil	.052	3.7	15.9	1.6	14.3	59.7	Satisfactory.
Chuka. River close to station.	.001	.004	trace	nil	.064	.4	.5	.2	.3	5.8	„
Donyo Sabuk, well	.018	.007	trace	nil	.024	1.4	3.5	1.9	1.6	17.6	Suspicious.
„ „ source?	trace	trace	—	nil	.012	1.4	3.1	2.1	1.0	17.7	Organically pure.
„ „ source?	trace	.002	.03	nil	.026	1.4	3.3	2.1	1.2	14.8	„ „
Elgeyo reserve, springs in Sain.	.006	.002	.008	nil	.040	3.7	18.8	15.6	3.2	237.9	Alkalinity = 217.5 anhyd. Sod. Carb.
Ellegerini river.	.001	.007	trace	nil	.110	.4	.7	.4	.3	5.5	Organically pure, very soft.
Ellegerini river, stream in partial flood.	.001	.007	.003	nil	.088	.2	.8	.7	.1	4.5	„ „ very soft.
Kabete, well.	trace	.0004	.45	nil	nil	5.0	6.2	2.9	3.3	25.6	„ „
Kibos river.	trace	.010	.003	nil	.135	nil	2.2	.4	1.8	12.0	Satisfactory, very soft.
Kipwen river.	.001	.008	trace	nil	.146	nil	.6	nil	.6	4.5	Organically pure, very soft.
Kobaiwa river, Elgon.	.001	.002	nil	nil	.034	.2	3.1	0.2	2.9	7.7	„ „ very soft.
Kwale, spring.	.012	.005	trace	trace	.040	1.8	1.7	1.0	.7	6.9	Polluted.
„ „	.016	.002	trace	trace	.047	1.6	1.7	1.0	.7	4.2	„
„ (Mungala, spring).	nil	.004	trace	nil	.040	1.8	.8	.2	.6	8.4	Organically pure.
Lumbwa, well.	.002	.006	.05	nil	.066	2.0	11.6	9.2	2.4	38.7	Satisfactory.
„ „	.004	.002	.16	nil	.005	3.1	15.4	9.8	5.6	33.5	Suspicious.
Mombasa, well. Salim road.	.003	.003	5.0	trace	.005	12.4	50.0	22.0	28.0	132.2	Polluted.
„ „ Ras Kibarani.	.006	.002	1.85	trace	.018	11.5	53.6	25.6	28.0	87.5	„
Nairobi Water Supply, January.	nil	.0072	.07	nil	nil	4.3	6.0	2.5	3.5	22.4	Satisfactory.
„ „ „ April.	nil	trace	.08	nil	.001	3.9	5.3	1.6	3.7	18.2	„
„ „ „ May.	trace	.0031	.05	nil	.015	4.1	5.2	1.4	3.8	18.0	„
„ „ „ June.	nil	.0007	.06	nil	.007	4.0	5.1	1.4	3.7	16.5	„
„ „ „ July.	nil	.0006	.05	nil	nil	3.8	5.2	1.4	3.8	16.0	„
„ „ „ August.	trace	.001	.05	nil	.002	3.9	5.4	1.3	4.1	16.6	„
„ „ „ September.	nil	nil	.04	nil	nil	3.9	5.5	1.7	3.8	18.0	„
„ „ „ October.	trace	.0024	.06	nil	.002	3.8	4.8	1.1	3.7	16.4	„
„ „ „ November.	nil	trace	.08	nil	.005	3.9	5.5	1.5	4.0	16.8	„
„ „ „ December.	nil	.0008	.06	nil	.005	3.7	5.9	2.0	3.9	16.7	„
Nairobi river, above outfall of sewer.	.08	.017	.05	trace	.203	6.4	7.6	3.0	4.6	27.1	Badly contaminated.
„ „ below outfall of sewer.	.472	.062	trace	trace	.454	6.7	7.8	3.0	4.8	31.7	„ „
„ „ „ papyrus swamp.	.004	.015	trace	trace	.200	7.0	8.2	1.4	6.8	26.3	Contaminated, but purified considerably by filtration through Swamp.
Ngong Road, well on	trace	.001	.13	nil	.007	15.3	17.0	9.7	7.3	77.8	Satisfactory.
Ruaraka river, well in bed of.	trace	.006	.18	nil	.027	2.6	4.3	1.1	3.3	14.7	Organically pure.
Saba saba river.	trace	.003	trace	nil	.064	.3	9.1	3.4	5.7	15.7	
Thererika river.	trace	.008	.006	nil	.081	1.1	3.7	nil	3.7	12.8	Satisfactory, very soft.

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VACCINATION RETURN.

1924.

Station.	Total No. Vaccinations.	Sex.		Age.		Race.			Primary Vaccinations.				Re-Vaccinations.				V. C. not given.				Percentage Success Rate in Primary Vaccinations.
		M.	F.	A.	C.	E.	I.	A.	T.	S.	F.	U.	T.	S.	F.	U.	T.	S.	F.	U.	
Eldoret. ..	246	240	6	242	4	—	3	243	194	137	21	36	52	22	10	20	—	—	—	—	86.7%
Fort Hall. ..	270	186	84	225	45	—	—	270	139	115	20	4	131	97	34	—	—	—	—	—	82.3%
Kakamega. ..	11,702	6.263	5,439	6,721	4,981	—	—	11,702	11,548	105	79	11,364	86	11	10	65	68	21	19	28	57.%
Kapsabet. ..	127	115	12	108	19	—	—	127	103	80	12	11	7	3	1	3	17	9	7	1	87.%
Kisii. ..	1,065	1,064	1	1,064	1	—	1	1,064	506	6	2	498	559	11	17	531	—	—	—	—	—
Kismayu, (Dec. not included).	56	51	5	56	—	—	—	56	56	53	2	1	—	—	—	—	—	—	—	—	96.4%
Kitui. ..	143	79	64	93	50	—	—	143	28	20	5	3	—	—	—	—	115	73	15	27	80.%
Kisumu. ..	13,985	13,985	—	13,985	—	—	—	13,985	—	—	—	—	—	—	—	—	13,985	149	271	13.565	100.% (Failures were all in Re-Vaccinations.)
Lamu. (December not included).	616	609	7	559	57	—	5	611	34	2	0	32	582	2	3	577	—	—	—	—	
Machakos. ..	470	469	1	402	68	1	29	440	275	117	7	151	195	50	47	98	—	—	—	—	94.3%
*Malindi. ..	2,974	766	311	666	411	—	8	1,069	2,602	17	9	2,576	372	29	8	335	—	—	—	—	
Mombasa (M.O.H.) ..	441	438	3	420	21	5	21	415	136	57	15	64	305	71	62	172	—	—	—	—	79.2%
Nakuru, (December not included).	346	343	3	337	9	4	5	337	30	26	2	22	316	217	76	23	—	—	—	—	92.8%
Nairobi (M.O.H.) ..	1,274	1,196	78	1,101	173	28	33	1,213	369	146	8	215	904	209	177	518	1	1	0	0	94.8%
Nairobi Prison. ..	970	930	40	968	2	—	20	950	160	109	0	51	810	353	310	147	—	—	—	—	100.%
Nyeri. ..	1,068	956	112	903	165	—	—	1,068	1,068	678	24	366	—	—	—	—	—	—	—	—	96.5%
Voi. (December not included).	14	12	2	—	14	—	6	8	14	14	0	0	—	—	—	—	—	—	—	—	100.%
TOTAL. ..	35,767	27,702	6.168	27,850	6,020	38	131	33,701	17.262	1,682	206	15,374	4.319	1,075	755	2.489	14.186	253	312	13.621	89.%

Note:—M.—Male.
F.—Female.
A.—Adult.
C.—Children.
* 1897 Vaccinations. No details given.

E.—European.
I.—Indian.
A.—African.
T.—Total.

S.—Successful.
F.—Failed.
U.—Unknown.

Excluding Kakamega results = 92.5%.

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MOISTURE IN TIMBER.

	100 parts dry wood contain
Camphor.	27.6 parts water.
,,	27.5 ,, ,,
,,	42.4 ,, ,,
,,	31.1 ,, ,,
Podocarpus.	54.5 ,, ,,
,,	54.8 ,, ,,
,,	88.5 ,, ,,
,,	31.7 ,, ,,
,,	22.6 ,, ,,
,,	36.6 ,, ,,
,,	8.8 ,, ,,
Msharage.	9.8 ,, ,,
,,	10.9 ,, ,,
,,	11.6 ,, ,,
Cedar.	21.3 ,, ,,
Mvuli.	10.2 ,, ,,
,,	10.5 ,, ,,
Unspecified.	13.7 ,, ,,
,,	33.3 ,, ,,
,,	22.8 ,, ,,
,,	10.5 ,, ,,
,,	15.5 ,, ,,
,,	16.0 ,, ,,

DISINFECTANTS.

	%	%
Tar Oils.	12.0	42.7
Cresols.	24.3	21.3
Fatty Acids.	5.9	19.5

RED PAINT.

Dry Paint	58.9	(Iron oxide 46.5 Silica, etc., 3.9 Lime. Magnesia.
Oil.	13.5	
Loss at 100°C.	27.6	
	100.0	

Vanilla essence.	29°.4 under proof.
Dry shampoo.	19°.7 under proof.

GOLD ORE ASSAYS.

per short ton.

	Silver and Gold.	Silver.		Gold.	
	Oz. dwts.	Oz.	dwts.	Oz.	dwts.
1.	.64	—		—	
2.	7.0	—		—	
3.	—	5.	11.4	10,	10.6
4.	1.16	—		—	
5.	0.58	—		—	
6.	1.40	—		—	
7.	1.92	—		—	
8.	.24	—		—	
9.	nil.	—		—	
10.	nil.	—		—	
11.	—	3.	10.6	51.	0.2
12.	—		4.3		15.7
13.	—		2.6		9.9
14.	0.2	—		—	
15.	—	nil.			13.4
16.	—		1.2		7.0
17.	—		8.5	1.	8.6
18.	1.2	—		—	

BULLION ASSAYS.

	Fineness.
1.	790.7
2.	795.4

TEMBO FOR MUNICIPALITY.

		% alcohol by volume.
January	16th.	3.94
February	15th.	3.69
March	18th.	3.57
April	17th.	2.74
June	20th.	.60
July	16th.	2.26
August	19th.	3.20
September.	17th.	1.64
October	17th.	3.05
November	19th.	.67
December	17th.	.87

	Springs in Lake Kelele	Lake Kessima, West Kenya,
	parts per 100,000.	
Total Solids.	78.6	63.3
Alkalinity as Sod. Carbonate	18.0	33.4
Chlorides as Sod. Chloride.	15.8	16.4
Sulphates.	small amount.	small amount.
Sulpheretted hydrogen.	.24	present.

PARTS PER 100,000.

	Nairobi tap water.	Locomotive feed water Makindu.	Wells at Kilifi.	
			A.	B.
Calcium carbonate	2.60	12.60	31.80	29.60
Zinc carbonate.	.58	—	—	—
Iron carbonate.	.26	—	—	—
Calcium sulphate.	—	—	—	5.36
Calcium chloride.	—	—	—	1.28
Magnesium carbonate	.77	11.04	.92	—
Magnesium sulphate	.25	—	4.98	—
Magnesium chloride	—	—	5.43	13.29
Sodium carbonate	—	20.77	—	—
Sodium sulphate	.18	23.22	—	—
Sodium chloride	5.97	3.43	81.26	72.39
Potassium sulphate	—	7.31	—	—
Potassium chloride	.80	2.71	3.28	3.53
Potassium nitrate	.47	.02	2.02	1.81
Silica	4.81	5.62	3.08	2.92
Iron oxide and Alumina	—	.62	.40	.26
	16.69	87.08	133.17	130.44
Total Solids, dried at 100°C	16.50	94.90	164.0	159.2
Hardness, Permanent	—	17.8	32.4	36.0
Hardness, Temporary	—	17.4	28.6	22.8
Dissolved oxygen	.631	—		
Free carbon dioxide	4.04	—		

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